JANUARY 11, 1960

STEEL
The Metalworking Weekly

A PENTON PUBLICATION

$5.65 BILLION for capital equipment

PRODUCTION EFFICIENCY

That's what metalworking will spend in 1960—24 per cent more than last year.

No. 1 in STEEL's 1960 Program for Management

Page 45

$1 Billion Steel Wage Package Paves Way for Banner 1960, More Inflation

Machine Searching: New Research Tool

Scrapmen Ready Fight for Comeback

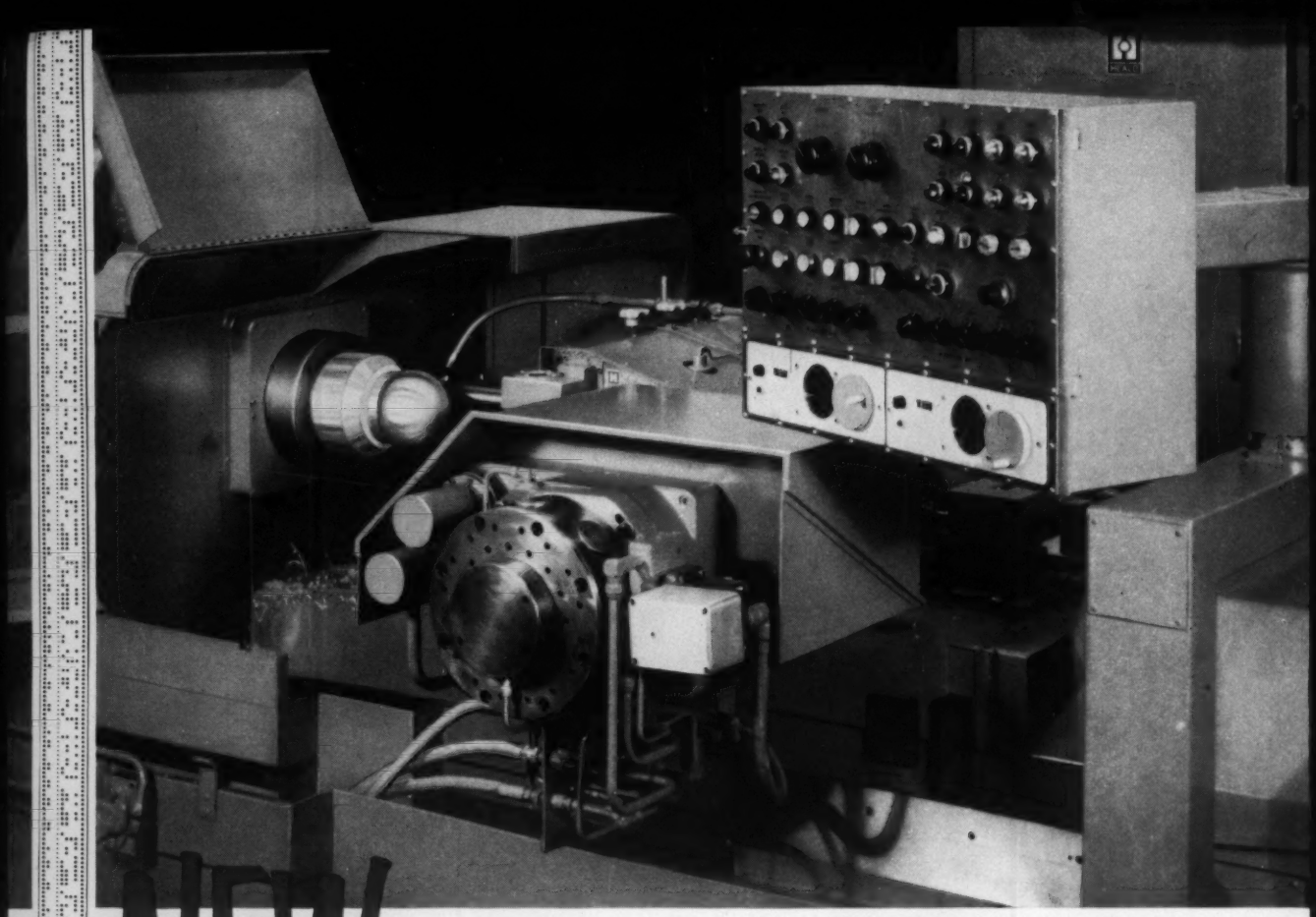
Transfer Line Cuts Handling Costs In Structural Fabricating Plant

How Wyman-Gordon Leaped the Size Barrier in Forging Superalloys

How Will We Combat Steel Imports?

METALWORKING OUTLOOK
PAGE 25

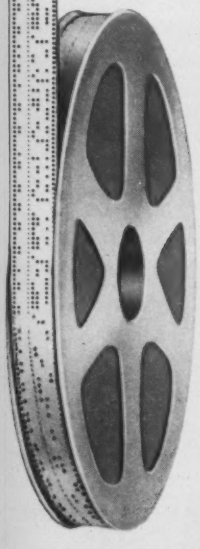
COMPLETE CONTENTS
TURN PAGE



This numerically-controlled Model S Bore-Matic operates in an air-conditioned, temperature-stabilized cubicle to maintain the extremely high precision of which the machine is capable.

NEW TAPE-CONTROLLED BORE-MATICS

precision bore and turn free contours to ±.0001"



ON THE NEW, numerically-controlled Heald Model S Bore-Matics, free-form shaped parts are borized in production with a heretofore unattainable degree of accuracy and precision. Tool motion and work speed are automatically controlled throughout the entire cycle, in increments so small that contours are generated with a dimensional tolerance of ± .0001". These Model S machines have been supplied in several sizes, with various types of numerical control, and are now in successful operation on a number of classified projects.

The machine shown above, with 20" table stroke and 15" cross slide travel, is arranged for punched tape control using Cincinnati Milling Machine Company's Acramatic system. Table and cross slide are actuated by preloaded, re-circulating ball nut precision lead screws with hydraulic motor drive. Pressure lubricated box-type ways track to an accuracy of 25 millionths in 20 inches of travel. The specially designed work spindle turns within 30 millionths for total runout, and is driven by a cam-controlled variable speed unit arranged to maintain the proper cutting speeds for any given point on the workpiece contour.

For further details on numerically-controlled Model S Bore-Matics, contact your Heald engineer or write to The Heald Machine Company, Worcester, Mass.

It PAYS to come to Heald

THE HEALD MACHINE COMPANY

Subsidiary of The Cincinnati Milling Machine Co.

Worcester 6, Massachusetts

Chicago • Cleveland • Dayton • Detroit • Indianapolis • Lansing • New York • Philadelphia • Syracuse

HEALD ®

MMT=PE

This Week in STEEL

The Metalworking Weekly

January 11, 1960 Vol. 146 No. 2

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Index available semiannually.

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STEEL, the metalworking weekly, is selectively distributed without charge to qualified management personnel with administrative, production, engineering, or purchasing functions in U. S. metalworking plants employing 20 or more. Those unable to qualify, or those wishing home delivered copies, may purchase copies at these rates: U. S. and possessions and Canada, $10 a year; all other countries, $20 a year; single copies, 50 cents. Metalworking Yearbook issue, $2. Published every Monday and copyright 1960 by The Penton Publishing Co., Penton Bldg., Cleveland 13, Ohio. Accepted as controlled circulation publication at Cleveland, Ohio.

Metalworking Pulse ▶

TURN

Metalworking Pulse

INDUSTRIAL PRODUCTION INDEX

	WEEK ENDED JAN. 2	PREVIOUS WEEK	MONTH AGO	YEAR AGO
(1947-49=100) Based on steel output, electric power output, freight carloadings, auto assemblies	167†	164	167	144

†Preliminary.

With the end of the steel impasse, the road is clear for a new attack on record levels of activity in metalworking during 1960. Steel output and auto production will lead the way during the first quarter.

Details on Page 55

U. S. PASSENGER CAR PRODUCTION

	WEEK ENDED JAN. 9	PREVIOUS WEEK	MONTH AGO	YEAR AGO
Number of units assembled	155,000*	111,574†	86,056	134,342

(Source: Ward's Automotive Reports.) *Estimated. †Preliminary.

Automakers are scheduling the heaviest quarter in history, with a target of 2,278,500 units. This will be the biggest January on record if the industry meets its schedule of 697,500 cars.

Details on Page 51

NATIONAL STEEL INGOT PRODUCTION

	WEEK ENDED JAN. 10	PREVIOUS WEEK	MONTH AGO	YEAR AGO
Net tons (thousands)	2,707*	2,726	2,732	2,085
Index (1947-49=100)	168.5*	169.7	170.1	129.8
Percentage of capacity	95.0*	96.3	96.5	73.6

*Estimated by STEEL on 1960 capacity; comparative figures reported by AISI on 1959 capacity.

National ingot rates during 1960 will be based on a capacity of 148,570,970 tons, an increase of 937,300 tons over the 1959 figure. A record output likely will be established in the first six months.

Details on Page 108

STEEL SCRAP PRICE COMPOSITE

	JAN. 6	WEEK AGO	MONTH AGO	YEAR AGO
Based on No. 1 heavy melting grade at Pittsburgh, Chicago, and eastern Pennsylvania.	$41.33	$41.33	$42.83	$39.67

For the fourth consecutive week, the composite price for No. 1 heavy melting steel held at $41.33. Suppliers anticipate an improvement in demand from the mills now that the steel labor controversy is settled.

Details on Page 123

FINISHED STEEL PRICE INDEX

	JAN. 5	WEEK AGO	MONTH AGO	YEAR AGO
Based on Bureau of Labor Statistics data (1947-49=100)	186.8	186.8	186.8	186.9

An eventual upward revision in finished steel prices is expected to develop as an aftermath of the labor settlement. For the immediate future, U. S. Steel proposes to "continue the general level of its prices."

Details on Page 109

This tag quickly identifies a bundle of Beth-Led bars in stock. But no tag is needed to identify a Beth-Led bar during its machining, for its performance is *visibly superior* to that of non-leaded steel.

Faster Metal Removal

Leaded steel permits an increase in optimum cutting speeds from 25 to 40%—sometimes even more

Longer Tool Life

Leaded steel machines easier in every way; more pieces can be produced per tool regrinding.

Smoother Machined Finishes

Leaded steel provides better chip control, takes closer tolerances and more accurate finishes.

Have You Tried Leaded Steel Lately?

Beth-Led is Bethlehem's new free-machining, high-sulphur carbon screw stock, the most modern leaded steel on the market. Manufactured under rigid quality controls, Beth-Led is a steel you can count on for top quality at rock-bottom cost.

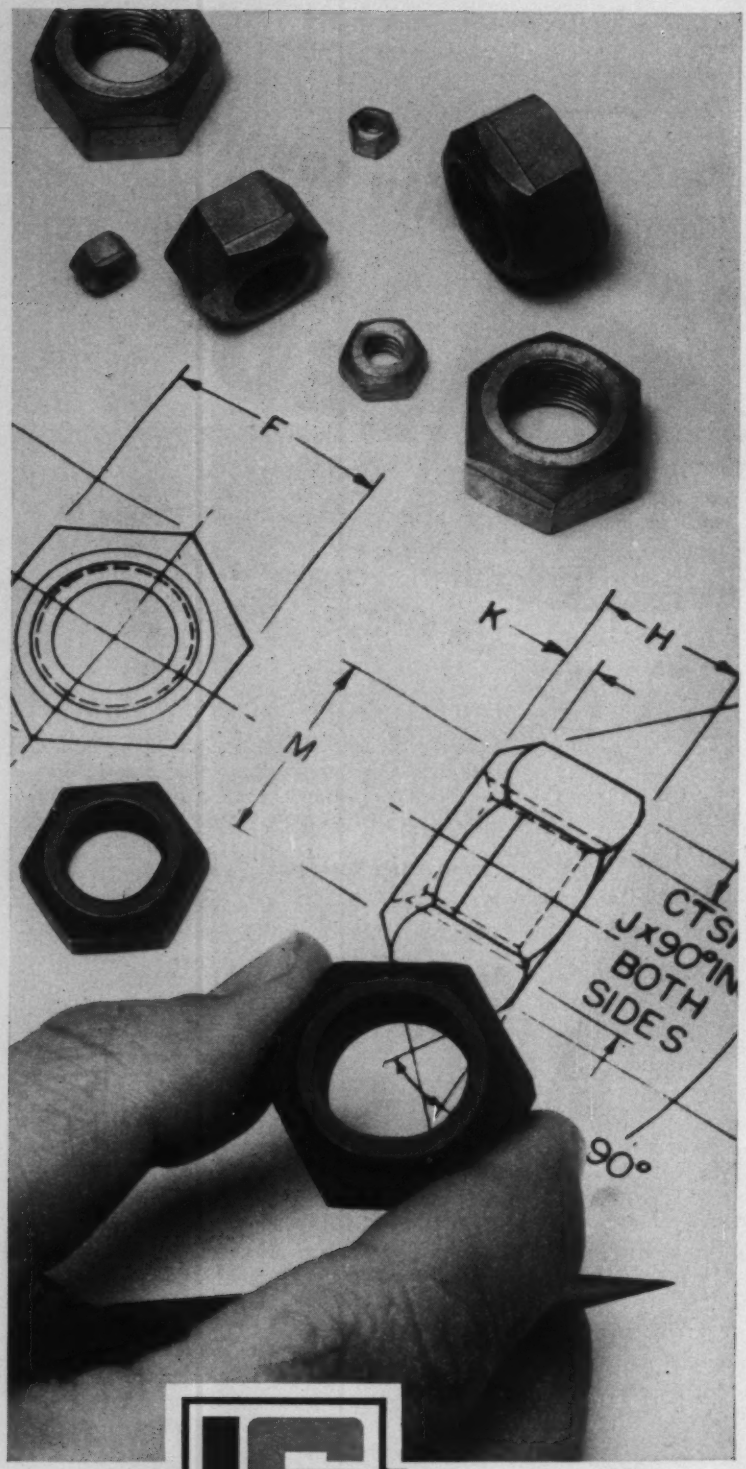
Plan now to give Beth-Led a trial. Our metallurgical engineers will gladly discuss its application to your product. As a cold-finished bar product, Beth-Led is distributed through non-integrated cold drawers.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL



New-style Stover lock-nuts*

draw up 33% tighter to increase squeak-rattle resistance

Car and tractor makers alone used about 80 million new-style Stover Lock Nuts in 1959. Reasons: savings in assembly, savings via improved squeak-rattle resistance in suspensions, steering linkage, chassis, engines, bodies.

You save in assembly: The new Stover needs only about ¾ the tightening torque to produce the same clamping force in bolts as produced by comparable standard fasteners and competitive lock nuts. Many companies are cashing in on this lower torque requirement by using air stall drivers, both single and multi-spindle. They're handy to use, stingy on air, economical to buy and maintain.

You save after the sale: Using your present drivers and air pressures, the new Stover Lock Nuts will draw up 33% tighter than comparable standard fasteners and competitive lock nuts—a whopping extra margin in squeak-rattle resistance and safe operation. Benefits: lower service costs, happier customers, repeat sales.

What's available: From ¼" dia. to 1½" dia. in fine and coarse thread. Grade A is for use on bolt and stud grades SAE 2 and lower; Grade B for use on SAE grades 3, 4 and 5 bolts and studs; Grade C for use with SAE grades 6, 7 and 8 bolts and studs. Stover nuts for use with machine screws No. 8 and larger are available on special order as are stainless steel and non-ferrous. Where space is a problem, such as on pinion and pulley shafts, Stover jam (thin) collar-type nuts in grades A and C are recommended.

For engineering information, price data and samples, contact Lamson & Sessions.

*Patented

LAMSON & SESSIONS

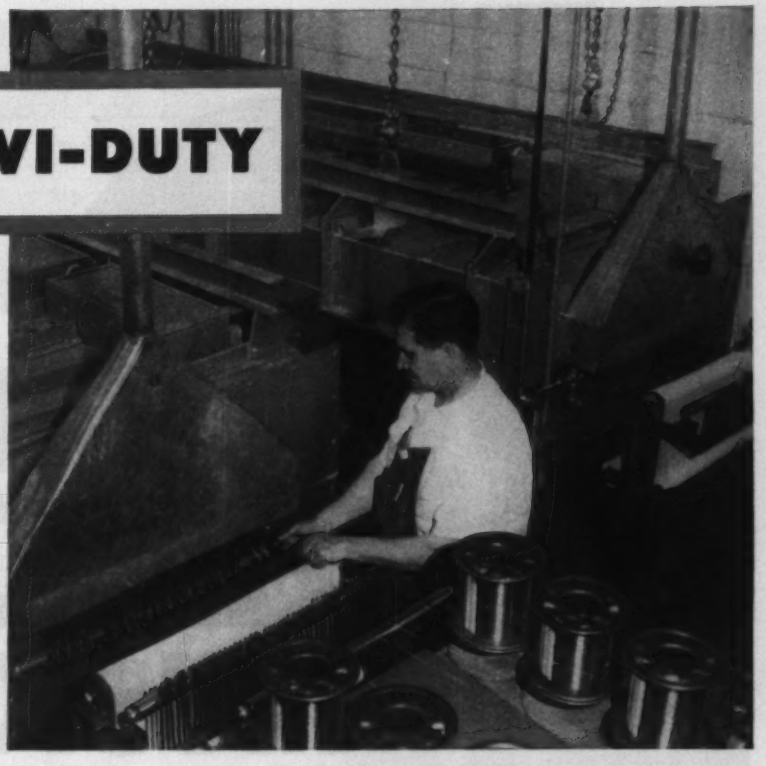
5000 TIEDEMAN ROAD • CLEVELAND 9, OHIO

Plants in Cleveland and Kent, Ohio • Chicago and Birmingham

Ask HEVI-DUTY

...Appleton Wire Works Corp. did

...and now bright anneals 4 miles of wire every minute at 1500° F. with



Two Hevi-Duty strand annealing furnaces, each with 40 alloy tubes and three zones of temperature control, produce up to 22,000 ft. of quality brass and bronze wire per minute at temperatures to 1500° F. at the Appleton Wire Works Corp., Appleton, Wis. Each electric annealing furnace is used 24 hours per day and five days a week.

2 HEVI-DUTY ELECTRIC FURNACES

At the Appleton Wire Works Corp., Appleton, Wisconsin, two Hevi-Duty electric strand annealing furnaces bright anneal up to 22,000 ft. of brass and bronze wire per minute at temperatures to 1500° F. The wire is used in the weaving of wire cloth for the paper and pulp industry.

Designed for maximum operating temperatures of 2000° F., each Hevi-Duty furnace has 40 alloy tubes through which the wires pass, and three zones of temperature control. Wire is annealed under a dissociated ammonia atmosphere.

These Hevi-Duty furnaces are in operation 120 hours per week, and this company reports significantly low operating costs. Temperature uniformity of ±5° F. along the heated length of all tubes has extended tube life by eliminating hot and cold spots.

Like Appleton Wire Works Corp., you too, can boost production, realize lower operating costs, and obtain temperature uniformity and rapid, easy temperature control with Hevi-Duty furnaces.

On any heat processing problem, contact Hevi-Duty. Call or write today.

HEVI-DUTY

A DIVISION OF BPC — BASIC PRODUCTS CORPORATION

ASK HEVI-DUTY
for more information on electric or fuel fired heat treating furnaces. Write for Bulletin 653A for full details.

HEVI-DUTY ELECTRIC COMPANY, MILWAUKEE 1, WISCONSIN

Industrial Furnaces and Ovens, Electric and Fuel • Laboratory Furnaces • Dry Type Transformers • Constant Current Regulators

. . . especially merits your careful investigation if you are interested in superior uniformity of PHYSICALS. This wire amazes the Spring Manufacturer when he tries it on his most difficult jobs.

A trial order will convince you.

108

WASHBURN WIRE COMPANY NEW YORK CITY

WASHBURN

CLEAN, UNIFORM BILLETS – STRIP – RECTANGULAR, ROUND, FLAT RODS
TEMPERED AND UNTEMPERED FLAT AND ROUND HIGH CARBON WIRES

STEEL
Servicenter

Please direct all correspondence to attention of Ed Service, STEEL, 1213 W. Third St., Cleveland 13, Ohio. January 11, 1960

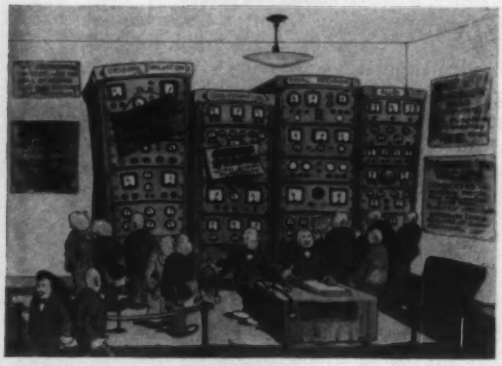
A T-Bird for Two Bits?

We opened a Beat-the-Experts entry the other day, and out dropped a quarter. R. E. Hopper, administrative assistant, Bethlehem Steel Co., San Francisco, had sent the two-bit piece with his contest entry. We toyed with stamping INSUFFICIENT FUNDS on the coupon and using the quarter to start an Ed Service Happiness Fund. However, visions of payola probes danced in our heads, so we mailed the coin posthaste to its sender.

Just for the record, Mr. Hopper guessed 3,888,888 automobiles will be produced in the U. S. from Jan. 1 through June 30, 1960. If he wins, we're innocent.

In a few weeks, we'll name the winners in our contest for the last half of 1959. Keep an eye peeled for the results.

Pricing the Hard Way



Only the computer knows how we can quote these prices.

Computers may be the last word in the magic world of electronics, but they're not sacrosanct to cartoonist Bill Eddy. His satirical drawings for the 1960 calendar of Minneapolis-Honeywell's Brown Instruments Div. poke fun at satellites, atomic fallout, engineering planning, and the state of business.

Some 80,000 of the color calendars are being distributed this year. If you don't have one, we recommend that you get one. You've only seen one of the cartoons, that leaves 11 more to enjoy.

A $25,000 Idea

When Charles Schwab was president of Bethlehem Steel Co., he received a valuable half hour lesson from Consultant Ivy Lee.

Mr. Lee simply told Mr. Schwab to write down the six most important tasks he had to do the next day and to number them in order of importance. He then told Mr. Schwab to start working on Item 1 the first thing the next morning and to stay with it until the task was finished. Then move on to Item 2, then Item 3, and so on. The whole interview lasted about 30 minutes and Mr. Lee told his student to try the system and then send a check for whatever the idea was worth.

In a few weeks, Mr. Schwab sent Mr. Lee a check for $25,000 and a letter saying the lesson was the most profitable from a money standpoint that he had ever learned. If you want a profitable lesson, read the next item:

Have You Negotiated a Contract?

Lots of executives face union negotiations with little more than courage, hope and a few facts. When the onslaught of words starts, and union bargainers present intricately phrased provisions, some company representatives wish they had stayed in bed that day. Next week, News Editor Bill Dean will present some ideas on what the professional negotiator can do for you.

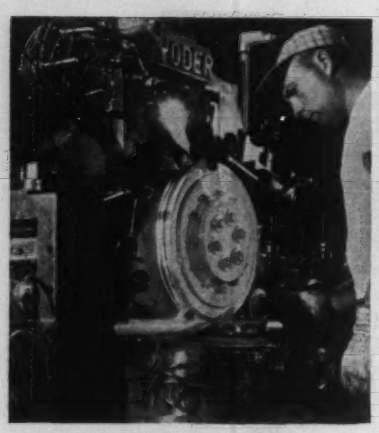
Bill has found that pros are in short supply and unless you staff a complete industrial relations department, it might be a good bet to retain a professional negotiator. Why? Aside from the shortage, the man is an objective expert whom you can call in when needed. You can save staff salaries and be on equal ground with the local union that calls in an international bargainer to do its negotiating.

A consultant has said that materials and machines are available to everyone, but one good way to get more competitive is to work on cost saving factors in labor contracts. One industrial association counted about 70 separate provisions that crop up in contracts—the pro is expert in all of them. Are you?

The Reader Asks for More

"I began reading your excellent Program for Management series sometime after its inception," writes N. A. Moerman, vice president-engineering, Potter Instrument Co. Inc., Plainview, N. Y. "I've found the articles so timely and informative that I am left with a feeling of incompleteness since I did not read them all. How can I obtain the complete series?"

We sent Mr. Moerman the 70 articles (ten from



Yoder Tube Mills speed tailpipe production at AP Parts Corporation

The AP Parts Corporation (Toledo, Ohio), world's largest producer of replacement mufflers and tailpipes, uses 2 YODER Tube Mills to produce more than *300* ft. of 1¾", 1⅞" and 2" tubing per minute.

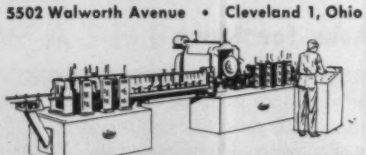
According to Mr. John Grindle, Plant Engineer, the two-man operated YODER Mills are vital to the production of the entire plant. "YODER Tube Mills earn their keep daily. They are easy to set up, maintain and operate .. the welds are clean and uniform. We depend on them for constant quality, high production and minimum downtime".

The YODER Tube Mills at AP Parts exemplify the production economies and dependability of all YODER-built equipment, whether it be Pipe and Tube Mills, Cold Roll-Forming Machinery or Slitting Equipment.

If your products require ferrous or non-ferrous pipe or tubing, from ¼" to 26" diameters, there is a YODER Mill designed to produce it economically, accurately and efficiently.

For complete information on YODER Pipe or Tube Mills ... write for the fully illustrated, 88 page YODER Tube Mill Book ... it is yours for the asking.

THE YODER COMPANY
5502 Walworth Avenue • Cleveland 1, Ohio



ENGINEERING YODER MANUFACTURING
PIPE AND TUBE MILLS
(ferrous or non-ferrous)

each year since 1953). In filling his request we learned that some 600,000 PFM reprints have been mailed to readers in the last seven years. Recognizing a good thing when they see one, the editors are continuing the series in the sixties.

In our Jan. 4 Yearbook, Page 93, we presented the theme of the current series: Production Efficiency and Materials Efficiency. In this issue you'll find the first article: Results of STEEL's survey of capital equipment spending plans. We hear metalworking will spend 24 per cent more this year than it did a year ago, so the wherewithal for obtaining PE and ME is available. For the how-to, be sure to read the new series.

'Send a Wire to a Friend' ...

... Was the innocuous invitation on the outside of Slim Jim greeting cards sent to advertisers by our sales staff. Inside the cards sent by Cal Fisher Jr., STEEL's New England ad manager, reposed the word "ME" (in 2 in. letters) and the illustration you see next door. The point: Cal wanted people to telegraph reservations for advertising space in STEEL's 1960 Metalworking Yearbook and Planning Guide.

Ernest Clark Jr., vice president, Henry A. Loudon Advertising, Boston, responded with a 7 in. wire—a hunk of dual twisted strand, rubber insulated wire.

Think of the consequences if Cal had requested a cable.

Keeping Up with the Times

Standard Horse Nail Corp., New Brighton, Pa., announces that in addition to its regular line, it now makes tabulating machine keys.

The reason for its product diversification might lie in the following news note:

Horseshoers Hit the Trail

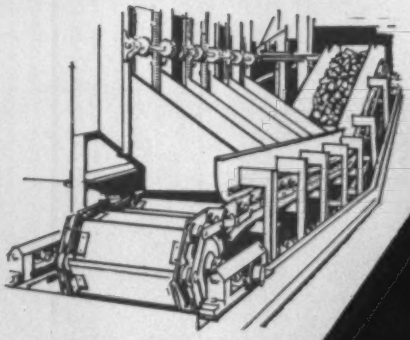
Membership in the International Union of Journeymen Horseshoers has been dwindling and five officers and 18 delegates to its 52nd biennial convention voted unanimously to do something about reversing the trend. In 1911, more than 11,000 horseshoers were working at the trade and now there are a scant 281. (Since its last convention, the union has lost nine members.)

IUJH members wield hammers at race tracks in the North and South and union leaders are convinced they can build membership through an organizing drive from St. Louis to the Rockies.

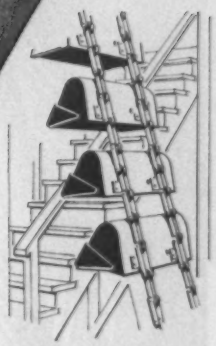
(Barring jurisdictional disputes, we suggest they push on to the Pacific. All the TV they-went-that-a-ways make Hollywood ripe for organizing.)

LINK-BELT long-pitch SS class bushed chain . . .

BUILT FOR THE LONG, HARD GRIND



FLANGED ROLLER TYPE for applications where the chain will operate on various type rails.



PLAIN ROLLER TYPE for applications where the chain will operate in channels, angle guides or vertically.

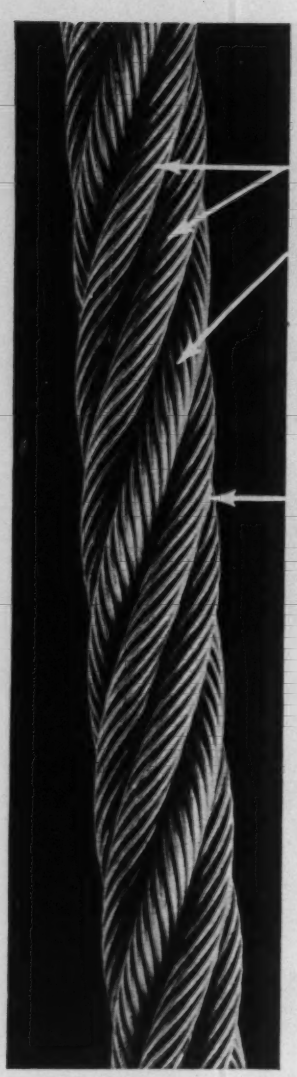
WHERE the going is tough—especially where abrasion and round-the-clock operation are encountered on long, slow-speed conveyors and elevators—long-pitch SS class chain pays off in low initial cost and maintenance, fewer shutdowns. These heavy-duty chains conform to all commercial standards for clearance and fits; pins and bushings have flats and notches to lock them against rotation in the sidebars.

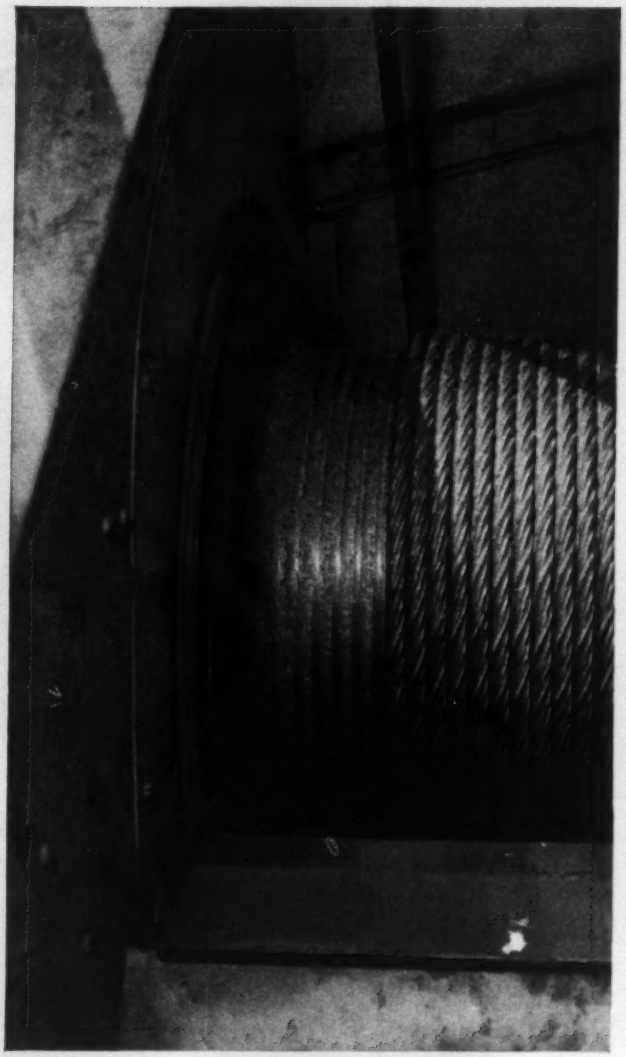
Industry's most modern chain-producing facilities enable Link-Belt to design and build special-type chains and sprockets to suit specific applications. Get full facts from Catalog 1050. Write direct, or call your Link-Belt office or authorized stock-carrying distributor . . . in the yellow pages of your phone book, under CHAINS.

LINK-BELT

CHAINS AND SPROCKETS

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants, Warehouses, District Sales Offices and Stock Carrying Distributors in All Principal Cities. Export Office, New York 7; Australia, Marrickville (Sydney); Brazil, Sao Paulo; Canada, Scarboro (Toronto 13); South Africa, Springs. Representatives Throughout the World.


Herringbone's two pairs of Lang lay strands and one pair of regular lay strands provide the ideal combination of maximum flexibility with good stability.
Finer wires inside contribute to Herringbone's excellent drum-winding characteristic.
Heavier outside wires in each strand have greater resistance to abrasion.



"...we would never hesitate to recommend it"

GRAY & FEAR, CONTRACTORS

This company continues: **"We have been using your Roebling Herringbone* for about one year. We find it is one of the best ropes we have ever used, outlasting previous ropes three to one. It is good that such a reliable rope is available."**

This is a direct field quote on the most remarkable development in wire rope in years...a new concept in wire rope design. Roebling Herringbone is the regular lay and Lang lay wire rope—two-ropes-in-one rope—combining the best features of both.

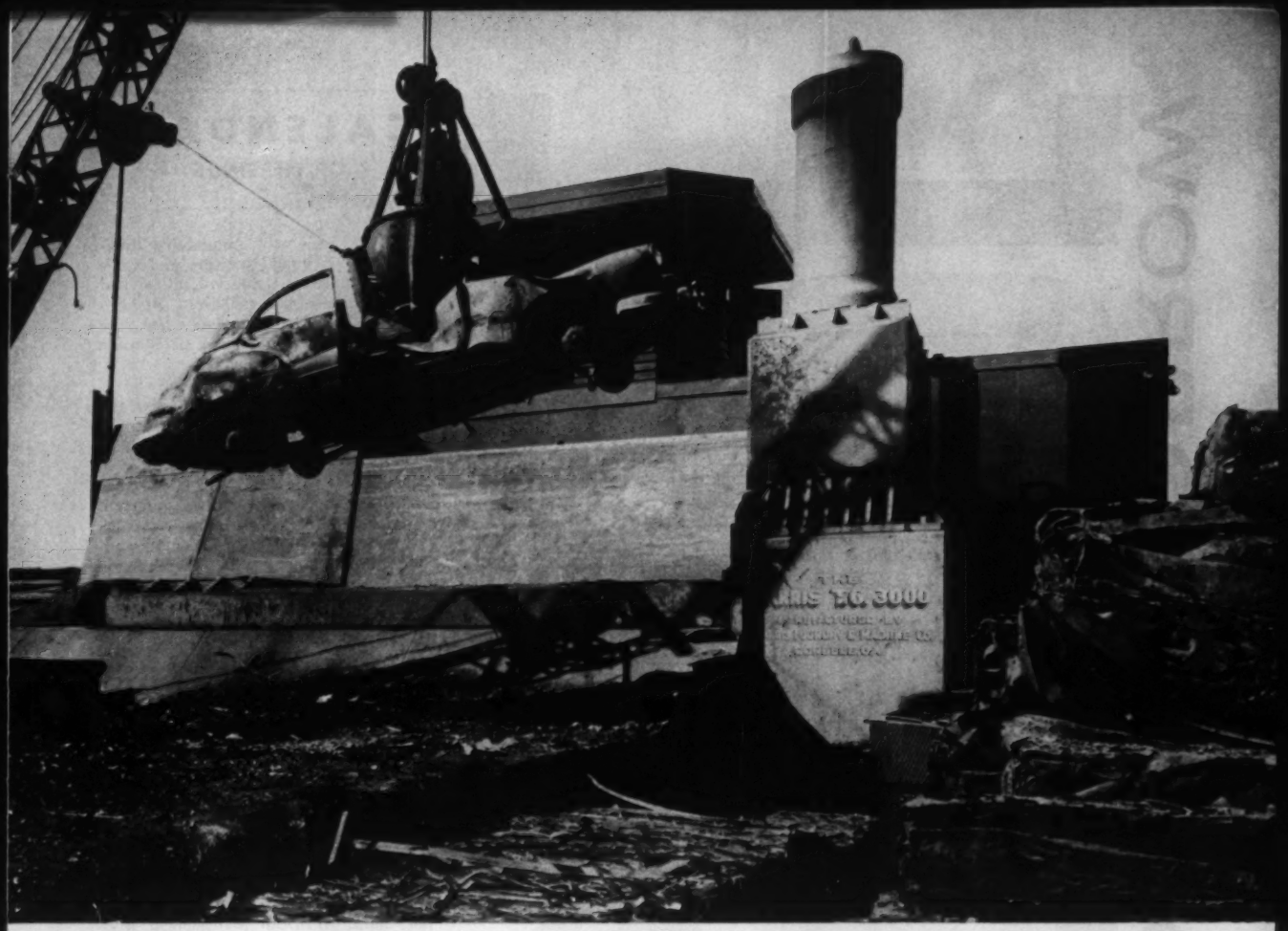
Herringbone delivers extra flexibility, extra abrasion resistance, unusual structural stability, extra resistance to shock, easy operation over sheaves and drums and smooth spooling properties.

We recommend Herringbone without reservation for general hoisting and the entire range of heavy-duty equipment. Your Roebling Distributor or Roebling's Wire Rope Division, Trenton 2, New Jersey, will give the full and fabulous details. *Reg. App. For

ROEBLING

Branch Offices in Principal Cities
John A. Roebling's Sons Division
The Colorado Fuel and Iron Corporation

ROEBLING
HERRINGBONE
WIRE ROPE

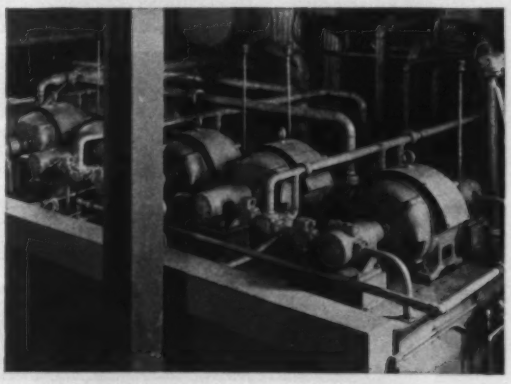


Smashing ¾ ton autos into 5 ft. bales

In a scrap salvage yard in Chicago, this huge press smashes automobiles into five-foot bales. Here's how it works. Stripped autos are shoved into a 20-foot press box. At the flip of a switch three giant plungers jam down with a force of over 1000 tons. Result: A compact bale, five feet long and two feet deep. About 30 cars an hour are run through this giant baling press.

Powering this mammoth machine requires sturdy motors. They have to deliver an instantaneous surge of power to drive home the huge plungers. Five Century Electric 100 hp motors do the job. Result: Plenty of dependable power when and where it's needed.

Century Electric application engineers have helped develop thousands of motor drive systems like this. And they can design the right drive system for your equipment because Century Electric designs, manufactures and applies motors and nothing but motors . . . your assurance of getting *more* than just a motor.



Five 100 hp Century Electric motors provide dependable muscle power for the huge press.

CENTURY ELECTRIC COMPANY

St. Louis 3, Missouri *Offices and Stock Points in Principal Cities*

Century

59-9

FORMULA FOR TOMORROW

STEEL

THE MACHINE TOOL EXPOSITION - 1960

INTERNATIONAL AMPHITHEATRE

CHICAGO, ILLINOIS

SEPTEMBER 6-16

NATIONAL MACHINE TOOL BUILDERS' ASSOCIATION

MMT-PE

METALWORKING

CALENDAR OF MEETINGS

Jan. 11-15, Society of Automotive Engineers Inc.: Annual meeting and engineering display, Sheraton-Cadillac and Statler-Hilton Hotels, Detroit. Society's address: 485 Lexington Ave., New York 17, N. Y. Secretary: John A. C. Warner.

Jan. 15, Malleable Founders' Society: Semi-annual meeting, Sheraton-Cleveland Hotel, Cleveland. Society's address: 781 Union Commerce Bldg., Cleveland 14, Ohio.

Jan. 18-19, Industrial Heating Equipment Association: Annual meeting, Warwick Hotel, Philadelphia. Association's address: Associations Bldg., Washington 6, D. C. Executive vice president: Robert E. Fleming.

Jan. 18-21, American Road Builders Association: Annual convention and highway materials and services exhibit, Netherland-Hilton Hotel, Cincinnati. Association's address: 600 World Center Bldg., Washington 6, D. C. Executive vice president. L. W. Prentiss.

Jan. 19-20, Steel Shipping Containers Institute Inc.: Winter meeting, St. Regis Hotel, New York. Institute's address: 600 Fifth Ave., New York 20, N. Y. Secretary: L. B. Miller.

Jan. 20-22, American Management Association: Research and development conference, Roosevelt Hotel, New York. Association's address: 1515 Broadway, New York 36, N. Y.

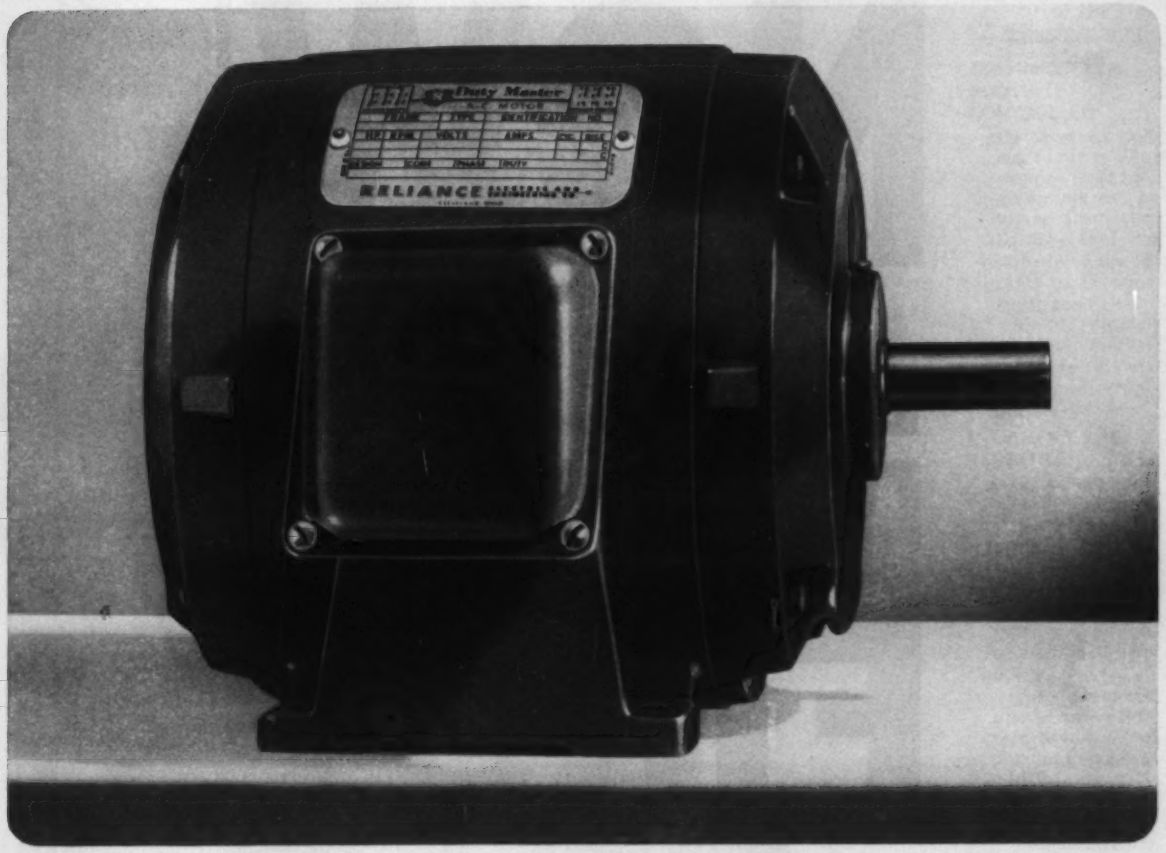
Jan. 20-22, Steel Plate Fabricators Association: Annual meeting, Roosevelt Hotel, New Orleans. Association's address: 105 W. Madison St., Chicago 2, Ill. Secretary: J. Dwight Evans.

Jan. 21-22, National Industrial Conference Board Inc.: General session for all associates, Hotel Commodore, New York. Board's address: 460 Park Ave., New York 22, N. Y.

Jan. 24-27, Truck-Trailer Manufacturers Association: Annual convention, Del Coronado Hotel, Coronado, Calif. Association's address: 710 Albee Bldg., Washington 5, D. C. Managing director: John B. Hulse.

Jan. 24-28, Associated Equipment Distributors: Annual meeting and exhibit, Conrad-Hilton Hotel, Chicago. Association's address: 30 E. Cedar St., Chicago 11, Ill. Executive secretary: P. D. Herman.

Jan. 25-27, American Management Association: International management conference, Roosevelt Hotel, New York. Association's address: 1515 Broadway, New York 36, N. Y.



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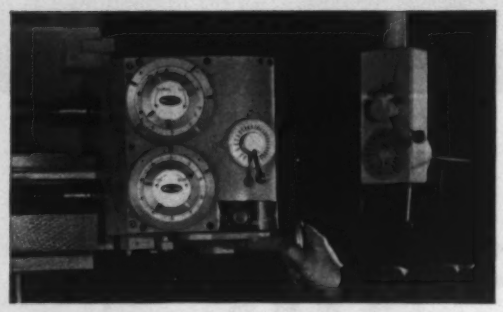

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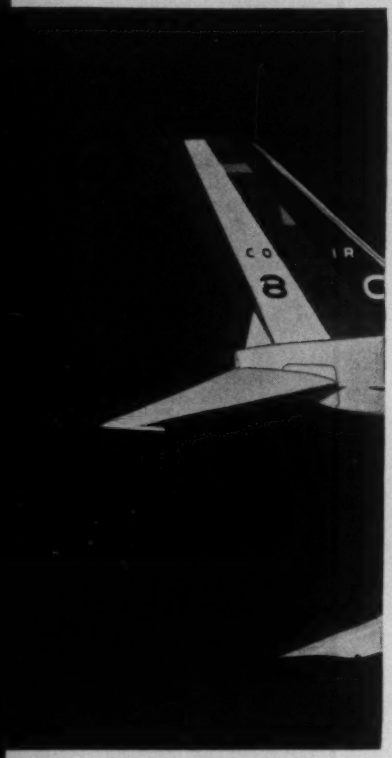

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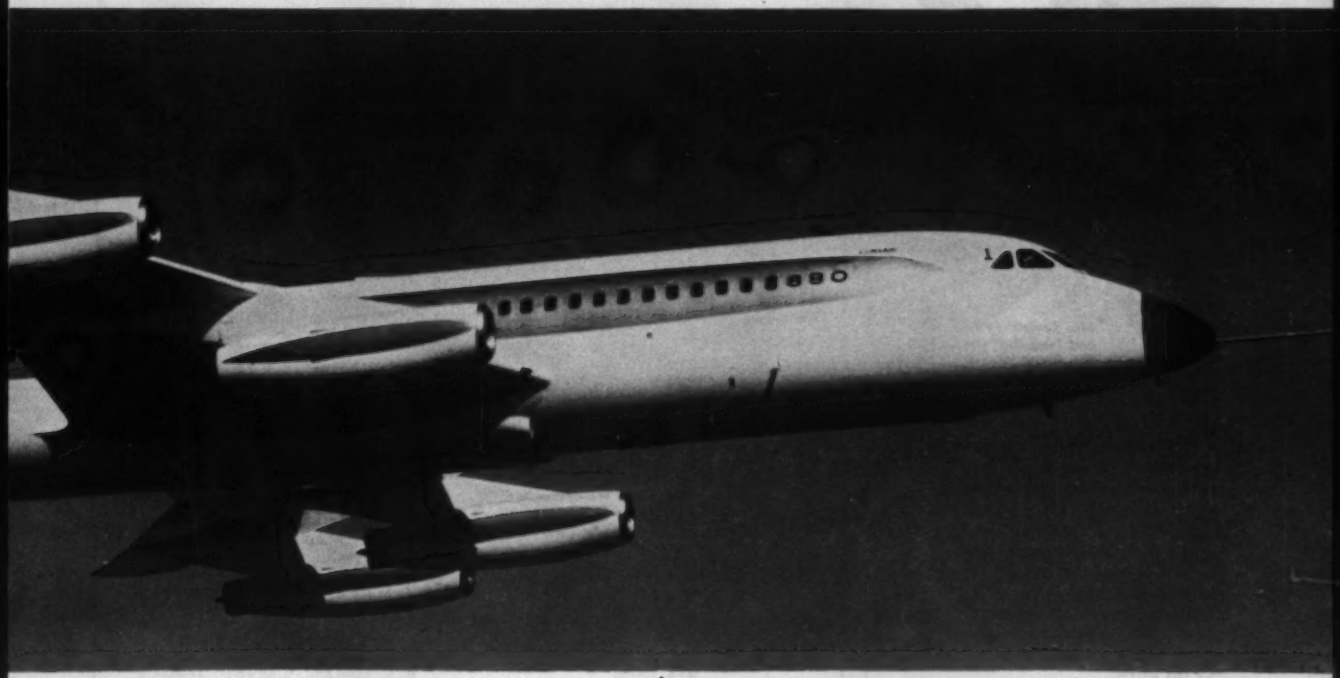

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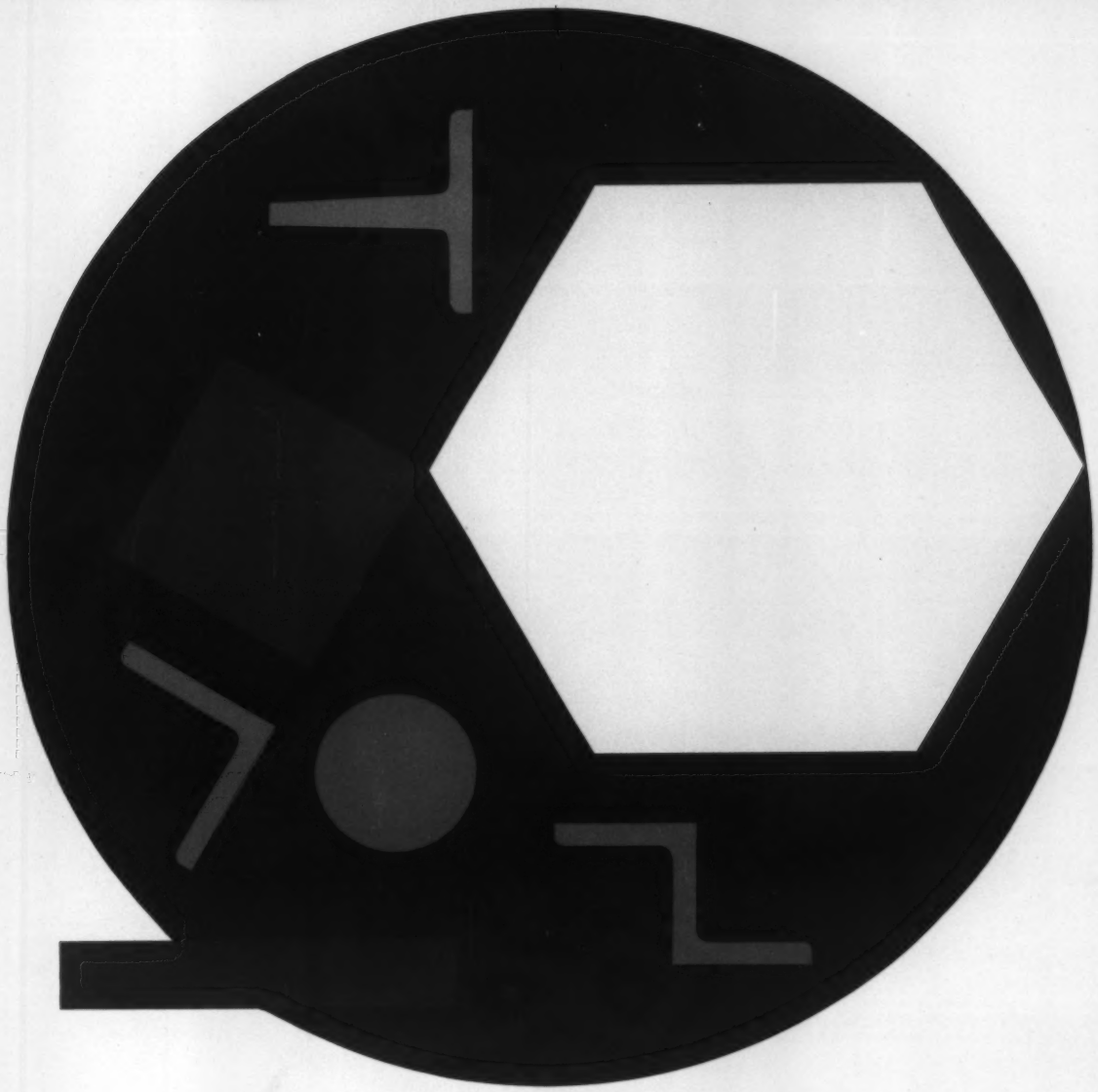

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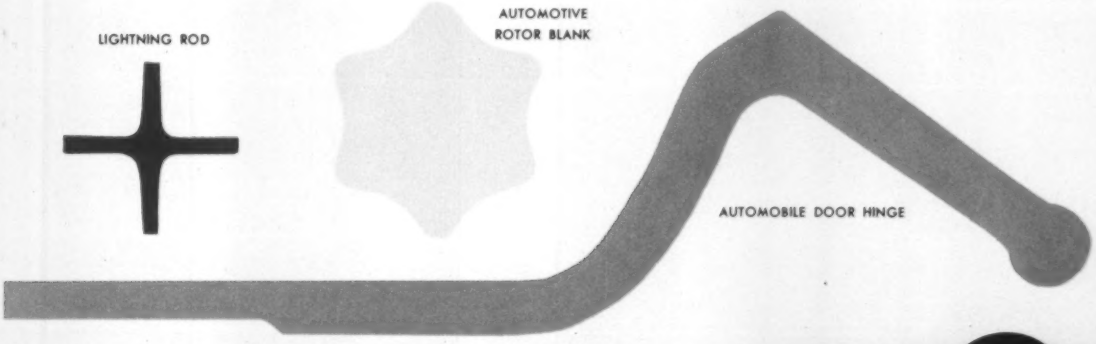

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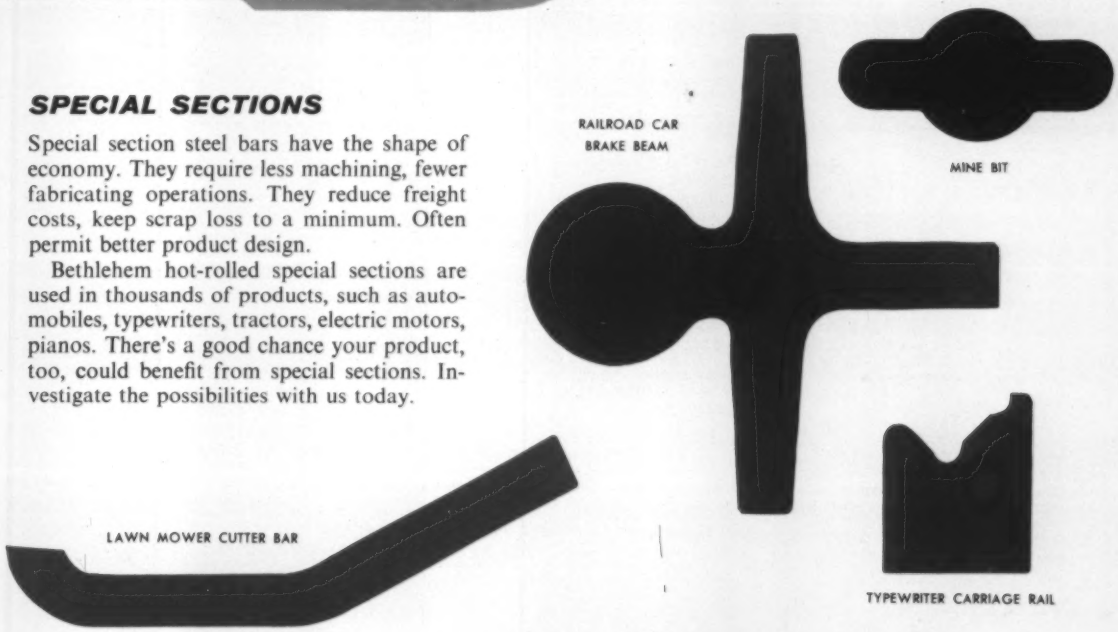

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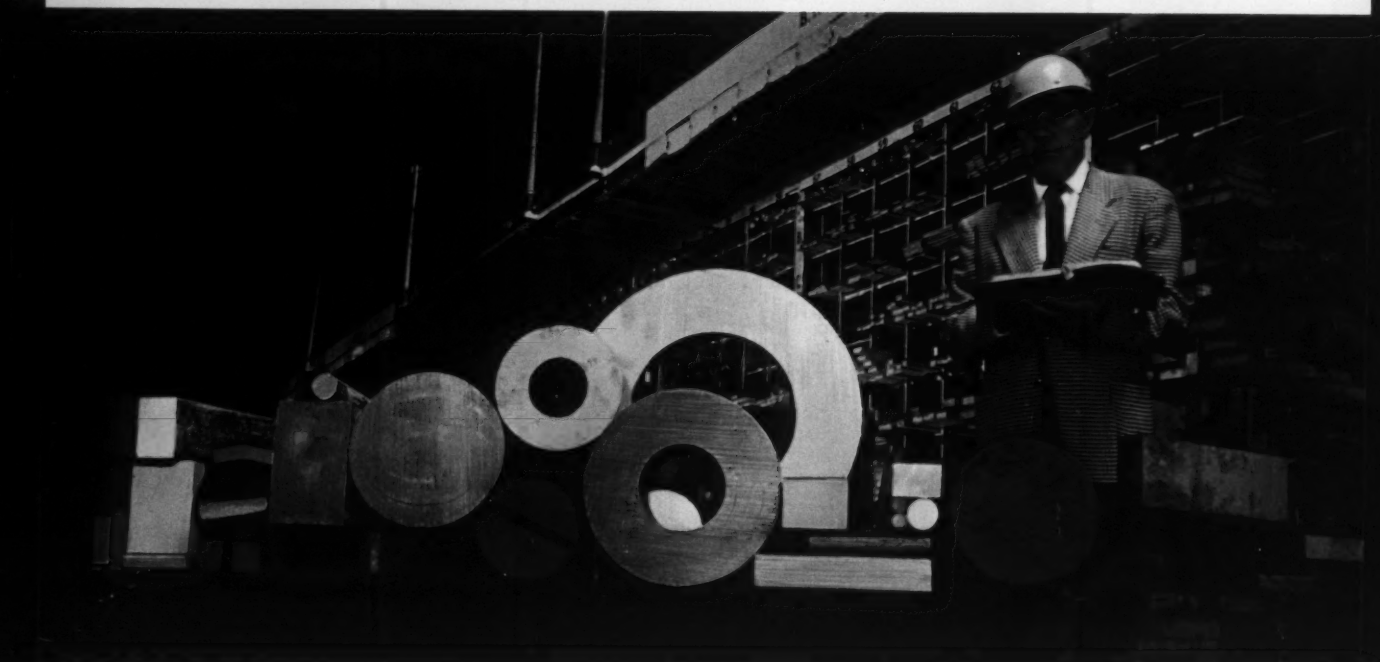

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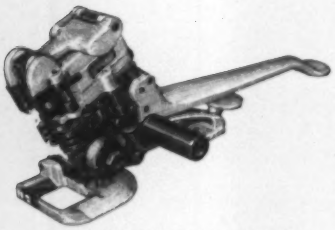

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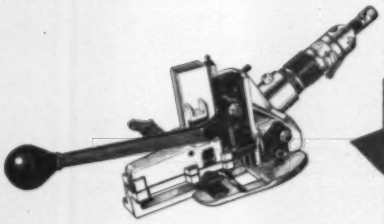

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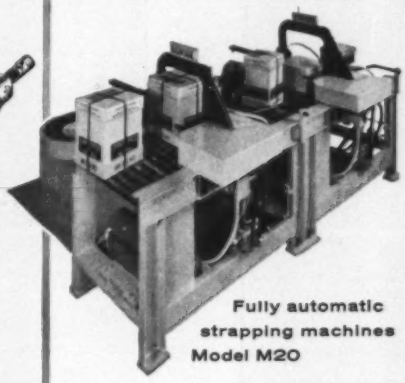

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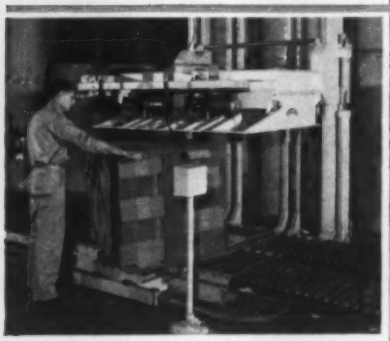

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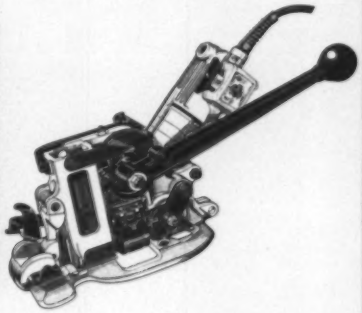

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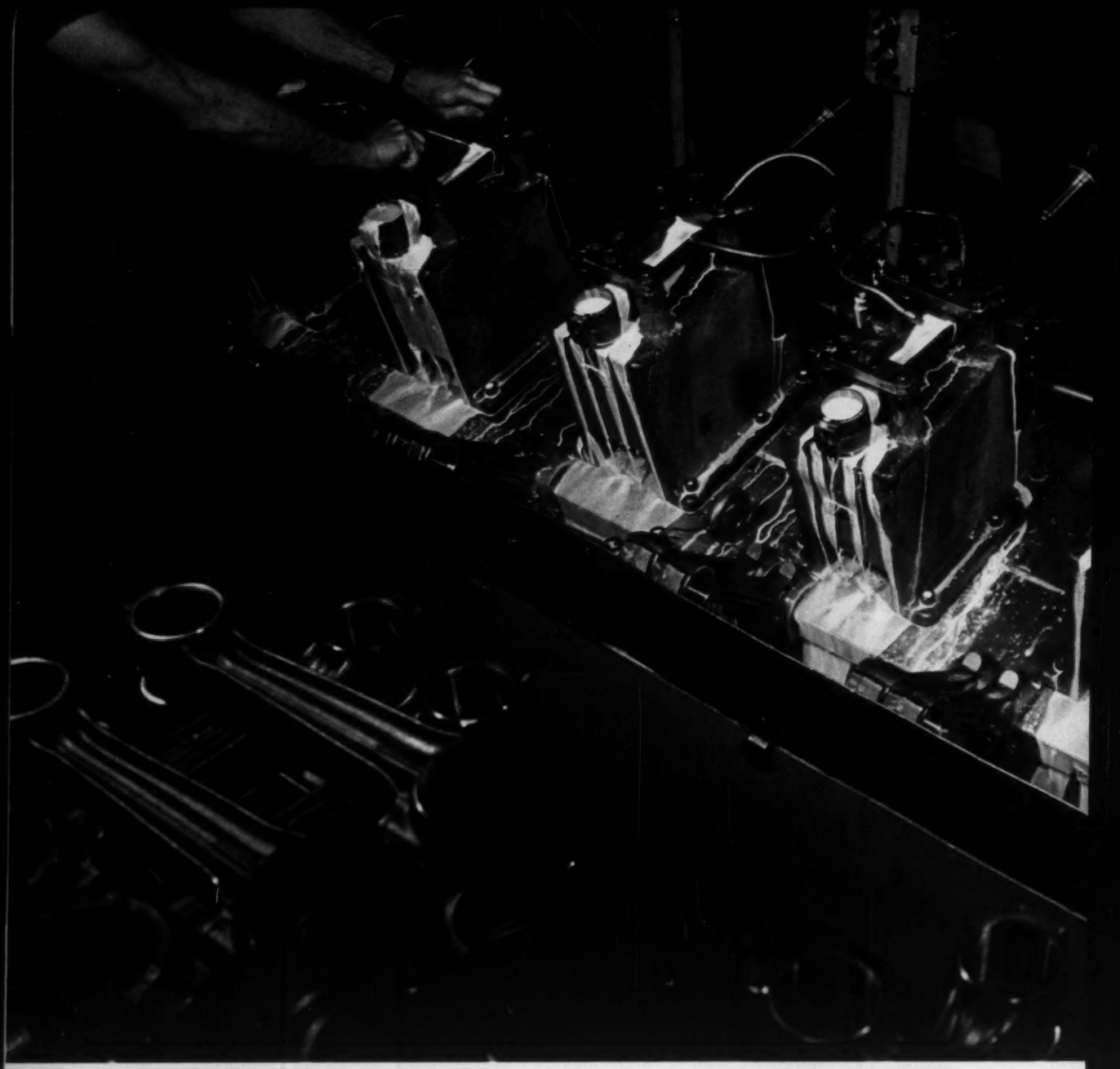

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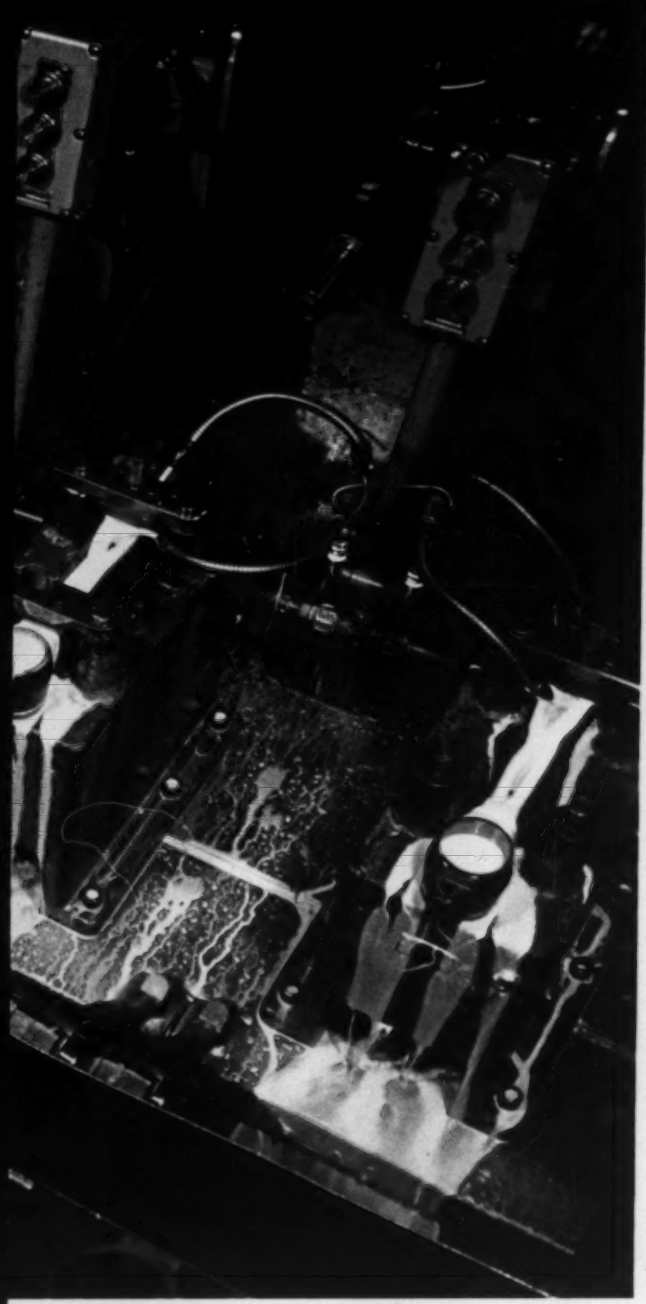
GULF MAKES THINGS

Leave it to the makers of world-famed Cummins Diesel engines to make every possible use of a good product! Cummins uses Gulfcut Soluble Oil not only to obtain superior cutting and longer tool life, but also to get the benefit of its rustproofing properties.

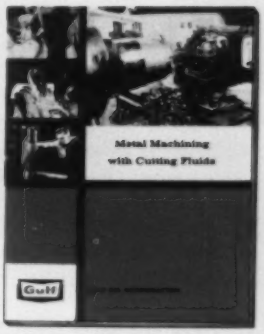
Cummins Foreman James L. Hoppus tells of drilling 12″ deep, ¼″ diameter holes through steel connecting rods. Gulfcut Soluble Oil keeps tool and work so cool, the drilling area so clean of chips, that this tough drilling job is often done in one pass without drill retraction.

For protection against rust, Cummins uses Gulfcut Soluble in two major applications. Sensitive fuel injector parts acquire a rust preventive film when dipped in the heated emulsion. And,



John Hedges, right, Supervisor of Tool Control, Cummins Engine Company, points out fuel injector protected by Gulfcut Soluble Oil to M. S. Ringo, Gulf Sales Engineer.

NEW 116-PAGE MANUAL tells all about cutting oil selection and usage. Send for your free copy of "Metal Machining with Cutting Fluids."



Six-station Avey Drill Press deep-drilling connecting rods with Gulfcut Soluble Oil at Cummins Engine Company, Inc., Columbus, Indiana.

effective rustproofing with Gulfcut® Soluble Oil . . .

RUN BETTER!

come summertime, Cummins adds five gallons of emulsion to the cooling systems of their engines to rustproof them until the winter season.

For every machining operation there is a Gulfcut oil to meet your requirements. A Gulf Sales Engineer can advise you on the proper type to help you improve machining performance. Just call the nearest Gulf office.

GULF

GULF OIL CORPORATION
Dept. DM, Gulf Bldg., Pittsburgh 30, Pa.

☐ Send literature on Gulfcut oils.
☐ Send copy of "Metal Machining with Cutting Fluids."

Name_____
Title_____
Company_____
Address_____
City_____ Zone____ State_____

SP-9728

METALOGICS

...the Ryerson science of giving optimum value for every purchasing dollar.

RYERSON PLUS VALUES

...how it works for you

Broadens Scope of Selection

Know a single source where you can get aircraft-quality alloys such as 9310, Nitralloy, and 4340 to A.R.T.C.-14 . . . as well as all standard commercial alloys and free-machining types? This is typical of the size and diversity of Ryerson stocks. Here, right at the tip of your dialing finger, are thousands of tons of steel and aluminum—in virtually every standard type, size and shape. Also, hard-to-get intermediate sizes and special analyses are readily available. This is true of Ryerson stocks, year in and year out—in all but periods of extended production shutdowns.

Brings Newest Developments

Remember when lead was first added to carbon steels for faster machining...when, a little later, leaded alloys came along? Ryerson stocked them for you first. And remember just recently when the world's fastest machining steel tubing and bars (Ledloy® 170 tubing and Ledloy 375 bars) were introduced? Again, Ryerson brought them to you first.

Gives New Measure of Quality

Quality—now there's a word that's worn thinner than an office-seeker's shoe sole. But Ryerson Metalogics has given it new meaning, with a brand-new set of rigid quality-control standards that are completely detailed and published for your scrutiny. They govern every aspect of specifications, verification, packaging, cutting and certification of all Ryerson products. If you want a tangible example of the scope of this new quality program, take a good look at Ryerson cutting tolerances. Then see if you can find any that are held more closely.

Provides Best Technical Help

"Expert" is another worn-out word we hesitate to use. But we do put at your disposal the industry's most experienced men. They're ready to give you the benefit of their nationwide, daily experience with all kinds of problems—material selection, fabrication and the ever-present specter "cost of possession." And remember, nowhere else will you find as wide a range of published technical information to help you in your metalworking operations. It's yours for the asking.

Builds Solid Business Relationship

Here's a company you should get to know better for our primary business is that of satisfying customers. And we've kept a lot of people satisfied over the last 100 years. We'd like to satisfy you, too.

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What do you need right now . . . tomorrow . . . or in the future? Whatever you need, Ryerson is there—"the fastest with the mostest"—exactly when you need it—as you need it.

Why not discuss the exciting story of Metalogics with your Ryerson representative soon. You'll find he can help you in more ways than you might think—to meet all your requirements for steel, aluminum, plastics and metalworking machinery.

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McDonald Wins: Here's What It Means

David McDonald and the United Steelworkers scored a victory in the labor pact that followed the longest steel strike on record. That's the opinion of most labor observers and industry executives. Also, they're sure that the settlement will send us off on another inflationary spiral, will make competition much tougher in the world market, and will discourage other industries from carrying on a diligent battle against featherbedding. For what industry leaders think of the pact, see Page 35.

1960 Labor Talk Timetable

About half of all major collective bargaining agreements expire this year. Important to metalworking are the talks in aircraft (April-June), communications (May-August), electrical products (October), coal (can be reopened on 60 days' notice). Expiring in 1961 are contracts in these industries: Trucking, maritime, automobile, machinery.

Metalworking Will Order Capital Equipment Worth . . .

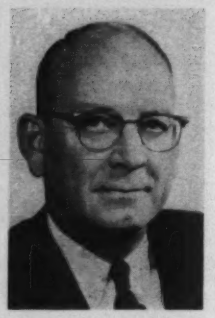
Expect metalworking companies to place orders for that much capital equipment this year. The bulk of the buying—$3.07 billion worth—will take place in the first half. Those predictions are revealed by STEEL's latest survey of capital equipment spending plans. It signals a record in dollar outlays for capital equipment. All industries surveyed will hike their buying. All equipment making industries will benefit. For a complete rundown on how much various industries will spend for various types of equipment, see Page 45.

Barometric Industries Show Sunny Sales Picture

Industry ordered $464.2 million worth of metal cutting machine tools during 1959's first 11 months (vs. $250.4 million during the like '58 period), reports National Machine Tool Builders' Association . . . New orders for resistance welding equipment during 1959's first 11 months were 38 per cent higher than those for the like '58 period, reports Resistance Welder Manufacturers' Association . . . American Gear Manufacturers Association's bookings index stood at 208.7 for November, 1959, vs. 182.7 for November, 1958 (1947-49 = 100) . . . For 1959's first 11 months, new orders for industrial

heating equipment totaled $93.8 million—up 134 per cent from the like '58 period, says Industrial Heating Equipment Association . . . Metal Treating Institute reports billings in 1959's first 11 months ran 32.7 per cent ahead of those in the same 1958 period . . . Sales of used machine tools declined in November, but stayed ahead of the year-earlier rate, notes Machinery Dealers National Association.

How Kaiser Steel Prexy Sees 1960



"The forces at work in the growing West continue to amaze even the most optimistic," declares Jack L. Ashby, president, Kaiser Steel Corp. He looks for the steel industry to set a record in the West, as well as nationally, this year. He says Kaiser will produce 2.5 million ingot tons of steel in '60—55 per cent more than the company's previous record output. It would mean near attainment of the production potential of expanded facilities. Since signing the new labor pact, Kaiser's grievances have dropped nearly 50 per cent from the year ago level.

Employment to Climb This Quarter

Look for a sizable pickup in employment this quarter. Manpower Inc., a temporary help service firm, asked 2500 executives in 25 industries what the employment trend in their companies would be during 1960's first quarter: 21 per cent expect an increase while only 10 per cent expect a decrease. Here's the prediction for metalworking industries:

	Expect increase	Expect decrease		Expect increase	Expect decrease
Agricultural equipment	26%	9%	Fabricated metal products	29%	6%
Transportation equipment	25%	16%	Furniture & fixtures	21%	9%
Electric appliances	26%	8%	Machinery	34%	6%
Construction	16%	24%	Primary metals	21%	5%

Steel Fabricators Try to Halt Price Squeeze

They're doing it by pouring dollars into cost trimming equipment. One of the most promising developments is a conveyorized production line at Mulfab Corp., McKees Rocks, Pa. The firm has slashed direct labor costs by more than 50 per cent, hiked production considerably (Page 70). Look for more fabricators to seek ways of lowering their handling costs.

Bellwether Tool & Die Industry Sees Full Recovery

Look for the contract tool and die industry to reach the same level of output this year that it hit in 1957—a 15 per cent gain over 1959. So believes

George S. Eaton, executive vice president, National Tool & Die Manufacturers Association. That signals good business for metalworking throughout this year and into 1961, since tool and die activity is a good indicator of metalworking's business trend.

Foreign Steel Gains in U. S. Market; More on the Way

Expect the new steel labor pact to put foreign steel producers in an even better position to invade domestic markets. They've already made a highly successful attack: The U. S. became a net importer of steel for the first time last year, as 3.6 million tons of foreign products were dumped in the U. S. during 1959's first nine months. For a rundown on types of imported products see Page 102.

More American Dollars Go to Common Market

Expect more acceleration of the trend toward heavy direct investments by U. S. firms in European Common Market countries. The value of U. S. direct investments there almost tripled from 1950 to 1959. U. S. firms poured $122 million directly into the area during the first half of 1959 (vs. $42 million in the like '58 period). Reasons: 1. Apprehension that the tariff preferences will further curtail U. S. exports to the region. 2. Free access to a mass market with a rising standard of living. 3. The ability (in 12 years or less) to export to any country in the trade bloc without import duties, quotas, or other trade obstacles. 4. Desire for a foothold in Europe. Germany and Italy have snagged the lion's share of American capital. U. S. direct investment in Germany jumped from $204 million in 1950 to $574 million in mid-'59. In Italy, the figure soared from $63 million to $264 million.

How to Get Information Faster

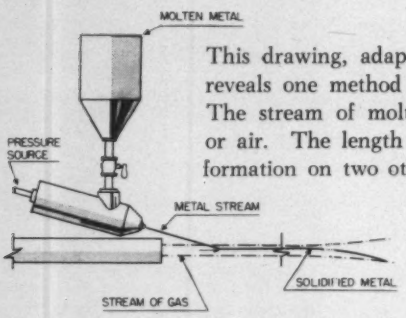
You'll soon be able to find metallurgical literature faster, more accurately, more thoroughly, and at less cost. American Society for Metals, Novelty, Ohio, will pave the way when it opens its Metals Documentation Service about Feb. 1. It'll offer electronic searching of reference materials with a GE Information Service Selector (Page 38).

Another Snag in Steel Deliveries

Steel buyers located in out-of-the-way places can expect some trouble in getting early deliveries. Trucking firms can get all the business they can handle on well traveled routes where they stand a good chance of picking

up cargo for return trips. A Pittsburgh mill says it waited two weeks for a truck, then switched to rail shipment at the customer's request. Needing steel in the worst way, the buyer decided that inconvenient delivery was better than none at all. Similar instances are reported by firms in small towns in West Virginia and Pennsylvania.

How Metal Fibers Are Made



This drawing, adapted by STEEL from patent literature, reveals one method for making fibers from metal melts. The stream of molten metal is floated on a jet of gas or air. The length of fibers can be controlled. For information on two other methods, see Page 74. Metals in fiber form have many potential applications. Examples: Filters, diffusers, mixers, battery plates, structural parts.

How FRB Revises Production Index

The Federal Reserve Board will soon start reporting its industrial production index figures on a new basis. The new figures will be substantially higher than the current data. Reason: FRB has added electric and gas utility output to the index components. It has also adjusted upward some of the production benchmarks. The new index shows the 1957-58 recession and recovery to be moderately greater than was indicated by the old index. It also reveals a faster rate of growth during the first half of the last decade than the old index had shown. The new index shows an average growth rate of 4.1 per cent a year for the economy during the 1947-59 period. Your new benchmark: Under the old index, the 1958 average was 134; the new index shows it to be 141 (1947-49 = 100).

GE Disciplines Managers for Talking Price with Competitors

Some officers and employees of General Electric Co. have had titles removed, salaries reduced, and positions downgraded because they engaged in price conversations with competitors. A company policy, in effect since 1946, prohibits any employee from discussing prices, terms and conditions of sales, or other competitive matters with any representative of a competitor.

Straws in the Wind

Expect Chevrolet Div. to buy around $5 million worth of new equipment for its Corvair engine plant within the next six months . . . Amtorg Trading Corp., New York, is recruiting distributors for its latest import—watches from Russia . . . General Electric Co. is cutting its prices on hydrogenerators 10 per cent, on some newly developed capacitors 5 per cent . . . By late February, American Motors Corp. plans to be operating 24 hours a day, six days a week, at its Milwaukee and Kenosha (Wis.) assembly plants . . . Kaiser Aluminum & Chemical Corp. is using polyethylene bags to package aluminum pigs and ingots for shipment.

G.O.CARLSON Inc.

Mill Inventory of Stainless Steel Plates

Unsheared HRAP Plates

January, 1960

GAUGE	WIDTH	LENGTH
	TYPE 17-4 PH*	
3/16	53	113
1/4	74	80
7/16	40/50	50/60
1	26	73
1-3/8	25	85
1-1/2	12	56
	TYPE 17-7 PH*	
3/16	65/98	108/210
1/4	63/84	145/240
5/16	68	74
7/16	55	64
1/2	60/96	100/120
19/32	48	120
31/32	24	135

*Trademark of Armco Steel Corporation

	TYPE 302	
3/16	84	195
1/4	96	170
5/16	96	280
3/8	84/96	260/350
1/2	96/97	280/310
5/8	96	290
3/4	60	96
1	96	186
1-1/4	62	330
1-1/2	36	150
	TYPE 304	
3/16	80/104	160/300
1/4	72/103	270/300
9/32	80/100	195/240
5/16	84/106	240/340
11/32	60	310
3/8	95/110	240/300
7/16	92	200
1/2	84/96	155/300
9/16	92/96	240/330
5/8	96/100	240/340
11/16	84/96	105/140
3/4	68/96	230/305
13/16	98	282
27/32	96	145
7/8	96/98	184/320
29/32	100	345
15/16	96	210
1	96/98	230/440
1-1/8	96	325
1-1/4	96	302
1-1/2	80/96	144/320
1-3/4	60	92
1-13/16	60	74
2	60/72	70/78
2-1/32	35/52	184/200
2-3/4	98	110
	TYPE 304-L	
3/16	54	192
3/16	72/96	144/290
7/32	60/68	195/243
1/4	72	156
1/4	88/105	145/310
9/32	96/147	138/284
5/16	96	200
11/32	80/106	190
3/8	81/108	170/330
13/32	94	280
7/16	69/106	105/275
17/32	73/100	134/233
1/2	96/108	210/260
9/16	91	260
5/8	75/96	153/320

GAUGE	WIDTH	LENGTH
	TYPE 304-L—CONTINUED	
11/16	96	264
23/32	98	126
3/4	60	172
13/16	94	230
27/32	67	248
7/8	96	278
15/16	75	270
31/32	62/92	168/191
1-1/8	96/98	165/198
1-1/4	96	240
1-1/2	96	240
2	80	205
	TYPE 309	
3/16	48	120
3/16	73/91	105/320
1/4	41/60	112/120
1/4	96	205/220
3/8	96	240
1/2	77/96	155/280
5/8	96	192
11/16	57	82
3/4	28/49	96
1-5/8	68	72
	TYPE 310	
3/16	48	120
3/16	72	104
1/4	72/95	200/240
5/16	63/82	185/240
11/32	96	125
1/2	99	260
2-1/4	25	48
	TYPE 316	
3/16	54	192
3/16	66	198
3/16	72	192
3/16	82/96	170/280
7/32	66/93	110/300
1/4	94/105	160/320
5/16	96	240/300
11/32	86/97	120/240
3/8	86/111	225/300
7/16	78/96	170/360
1/2	96/106	230/300
9/16	74/96	205/290
5/8	96	285
11/16	96	183
3/4	96	280
13/16	77	140
7/8	96/102	236/370
15/16	98	188
31/32	96	276
1	98	242
1-1/8	98	244
1-1/4	65/96	240/260
1-1/2	67	226
2	40	60
2-1/2	70	100
	TYPE 316-L	
3/16	72/90	150/170
7/32	93/110	118/120
1/4	72	156
1/4	72/108	156/300
5/16	70/96	240/295
11/32	92	210
3/8	72/96	200/250
7/16	76/96	122/240
1/2	96	200
17/32	100	135
9/16	96	303
5/8	96	240

GAUGE	WIDTH	LENGTH
	TYPE 316-L—CONTINUED	
11/16	96	138
3/4	84	251
13/16	96	310
7/8	98	214
15/16	96	275
1	96	248
1-1/8	88/98	250/280
1-1/4	98	360
1-1/2	93	276
1-3/4	83	98
2-1/4	63	170
	TYPE 317	
3/16	52	190
1/4	33/61	72/120
5/16	63/83	105/170
3/8	96	135
1/2	67	70
1-5/8	37	66
	TYPE 317-L	
3/16	83/93	150/324
1/4	68/74	235/323
5/16	42	130/309
3/8	88/100	101/109
13/32	100	200
7/16	47	100
1-1/4	32	136
	TYPE 321	
3/16	80	168
3/16	84/91	300/340
1/4	73/94	200/320
5/16	96	288
3/8	96	230
1/2	96	144
9/16	80	159
5/8	96	235
3/4	96	250
7/8	60/96	120/126
1	96	235
1-1/8	70	126
1-1/4	96	220
1-1/2	96	180
1-5/8	72	72
	TYPE 347	
3/16	48	123
3/16	91	135
1/4	72/96	240/300
9/32	94	118
5/16	96	300
11/32	72/98	177/209
3/8	96	240/330
7/16	96	205
15/32	93	128
1/2	94	240
5/8	96	325
11/16	70/100	104/235
3/4	57	120
7/8	63/80	160/190
1	96/98	170/228
1-1/8	52	56
1-1/4	96	240
1-1/2	97	170
1-3/4	55	64
2-3/4	35	50
	TYPE 405	
3/16	77/88	195/235
7/32	77	126
1/4	94	180
5/16	70/96	120/275
3/8	96	354
13/32	86	160

GAUGE	WIDTH	LENGTH
	TYPE 405—CONTINUED	
7/16	60/94	245/255
1/2	61/96	110/174
9/16	97	140
5/8	96	304
3/4	83	167
7/8	96	254
15/16	69	135
1	99	145
1-1/8	97	148
1-1/4	96	208
1-3/8	38	223
1-1/2	84	145
	TYPE 410	
3/16	72/91	190/295
1/4	73/100	275/290
5/16	95/96	173/365
11/32	97	160
3/8	94/98	130/278
7/16	74/96	139/310
1/2	73/98	200/275
19/32	92	350
5/8	96	180
21/32	96	375
3/4	96	199
13/16	104	120
7/8	96	149
1	33	196
1-1/4	98	189
1-5/16	55	170
1-1/2	68	176
1-3/4	60	62
	TYPE 430	
3/16	86/90	190/290
7/32	72/96	115/295
1/4	86/97	200/300
9/32	62	240
5/16	96/99	240/310
3/8	96/97	175/300
7/16	75/98	290/305
1/2	96	210
9/16	87	240
5/8	60/93	120/130
3/4	82	375
7/8	77	260
29/32	97	204
1	98	206
1-1/8	96	220
1-1/4	96	180
1-1/2	96	180
2	48	95
2-9/32	70	119

TYPE 502-½ Mo
(This grade available in plate only. Our base price is 28.25¢.)

3/16	88/94	235/300
1/4	79/102	225/280
5/16	78/85	169/338
11/32	92	300
3/8	72/96	250/360
7/16	96	138
1/2	96	179
9/16	94	140
5/8	96	240
11/16	66	76
3/4	96	295
7/8	36	230
1	76	96
1-1/4	80	154
1-1/2	72	144

Mill Inventory of Stainless Steel Heads

A.S.M.E. FLANGED AND DISHED

(1½" to 2" straight flange—annealed and pickled after forming for maximum corrosion resistance)

O.D.	GAUGE	304	304-L	316	316-L	347
8-5/8"	3/16"	8	10	2	10	
10"	3/16"	2	18	12	12	3
12"	3/16"	16	6	8	6	
12"	1/4"	2	8	4	12	
14"	3/16"	2	4	10	5	
16"	3/16"	2	9	10	4	
16"	1/4"	5	7	10	5	
18"	3/16"	0	1	13	11	1
18"	1/4"	12	7	11	8	
18"	3/8"	3	2	4	2	
20"	3/16"	7	11	10	1	
24"	3/16"	14	14	4	5	11
24"	1/4"	19	11	8	8	34
24"	5/16"	6	2	18	6	
24"	3/8"	4	4	2	3	
30"	3/16"	22	10	1	0	
30"	1/4"	0	7	9	4	3
36"	3/16"	7	8	0	2	
36"	1/4"	16	4	8	6	2
36"	5/16"	3	3	2	2	
36"	3/8"	5	2	3	2	
42"	3/16"	9	0	6	4	
42"	1/4"	2	6	8	8	
42"	5/16"	0	0	4	0	
48"	3/16"	2	7	12	7	
48"	1/4"	5	10	9	14	2
48"	5/16"	6	5	8	4	
48"	3/8"	5	6	0	1	
54"	3/16"	2	4	2	4	
54"	1/4"	6	3	4	5	
60"	3/16"	7	4	4	6	
60"	1/4"	2	8	9	2	
60"	5/16"	1	0	0	1	
60"	3/8"	7	3	5	2	
66"	1/4"	6	6	3	3	
66"	5/16"	0	2	0	0	
72"	1/4"	6	5	6	1	
72"	5/16"	6	2	6	2	
84"	5/16"	0	0	0	2	

STANDARD FLANGED AND DISHED

18"	1/4"	2	4	2	4
24"	3/16"	0	2	3	5
24"	1/4"	5	1	8	2
30"	3/16"	8	4	4	4
30"	1/4"	5	4	2	2
36"	3/16"	12	3	5	2
36"	1/4"	6	3	6	3
42"	3/16"	2	4	5	3
48"	3/16"	2	4	6	4
48"	1/4"	7	4	2	2
54"	3/16"	2	4	2	4

The stainless plates and heads listed above are typical of our current mill inventory; similar sizes are constantly being produced. Limited quantities of PH 15-7 Mo, 309 S, D 319 and D 319-L are on hand. Other grades—305, 309 SCb and 314—can be produced for specific orders. We will cut to your required sizes within 2 to 3 days, faster when required.

For latest information on exact quantities of stainless steel plates, tank heads and other available plate products, mail this coupon now.

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LeBlond Indianapolis Distributors
HAPPY LATHE BUYER:
"We figure our new LeBlond will pay for itself in 3½ years!"
R. O. BERTSCH, Vice President
Bertsch & Co.
Cambridge City, Ind.
SALES MESSAGE:
Having a new LeBlond is a lot better than having the cash. Where else could you get a 30% per annum return on a blue chip* investment? Where else but at your LeBlond Distributor's. See him today!
*LeBlond's lasting value is acknowledged everywhere.
THE R. K. LeBLOND MACHINE TOOL COMPANY
Cincinnati 8, Ohio
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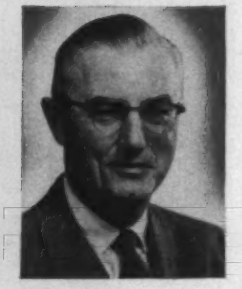

Challenge of Defeat

Now that the longest and roughest steel strike has been settled, metalworking managers are appraising its effects on the "soaring sixties." They find some good, some bad.

Business will boom immediately. Uncertainties are removed. Material shortages are averted. Metalworking will set records in dollar volume in 1960.

But the high volume business may prompt analogy to a New Year's Eve celebration. The potions will be exhilarating, but they could be followed by an agonizing hangover.

The settlement is inflationary. Let us not kid ourselves about that. And let us not be kidded by political pomposities. Traditionally, the industry has figured that each penny in wage increases boosts steelmaking costs 40 cents a ton, including the rippling effects of goods and services purchased. That rule of thumb indicates a probable increase of $16 a ton in steelmaking costs over the next several years.

Price increases appear to be inevitable. The only question is when.

The steel pact will influence metalworking and other upcoming wage negotiations.

The settlement widens the gap between employment costs of U. S. and foreign industry. Imports will gain. Exports will drop. More companies will be forced to acquire foreign plants to take advantage of lower wages abroad. John L. Lewis, founder of the steelworkers' union, laments that a thousand U. S. companies already have plants abroad, employ a million foreign workers.

Those are bad effects. They threaten the competitive position of U. S. industry. They threaten the job security of American workers. They threaten our national security.

But the settlement is a fact with which we must live. It poses new challenges for production efficiency that must be met aggressively.

This year, metalworking management will take a giant step in the right direction by buying $5.65 billion worth of modern production equipment. To obtain optimum production efficiency, they need four times that much.

They need a new approach to organization for production efficiency.

They need depreciation reforms.

They need worker co-operation to eliminate waste and inefficiency.

The promotion of those objectives is the purpose of this magazine's Production Efficiency series (see Page 45).

We believe that, with understanding and will, an intelligent combination of men and machines can improve our production efficiency wondrously.

That is the challenge of defeat.

Walter J. Campbell

EDITOR

Dann Goodson, *Manager Motor-Driven Compressor Sales, The Cooper-Bessemer Corporation, explains...*

How Cooper-Bessemer's new, compact Air Compressors simplify installation and reduce costs

The DMR compressors shown here are two models of a new line of *compact, 720 rpm* machines, unmatched in reliability. With these units, Cooper-Bessemer introduces a new standard of installation economy. So highly compact, the DMR compressors are readily installed in existing space, avoiding the need for additional housing facilities. They can be located at strategic points throughout the plant to supplement existing air line services without additional feeders to help supply your production needs at minimum cost.

The new DMR units come completely equipped with integral motor-drive and intercooler... ready for operation. Their control can also be integrally mounted as shown. They are available for two-stage applications in the range of 500 to 2000 cfm and discharge pressures of 80 to 125 psi... also for single-stage and three-stage operation.

The introduction of this new line of air compressors, plus the portable tool facilities of our new subsidiary, The Rotor Tool Company, enable Cooper-Bessemer to give you full-scope service for your industrial air power needs. Call the nearby Cooper-Bessemer office or air compressor agent for Bulletin No. 94 on the new DMR line.

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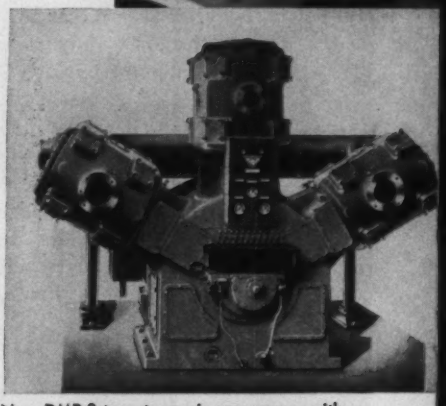
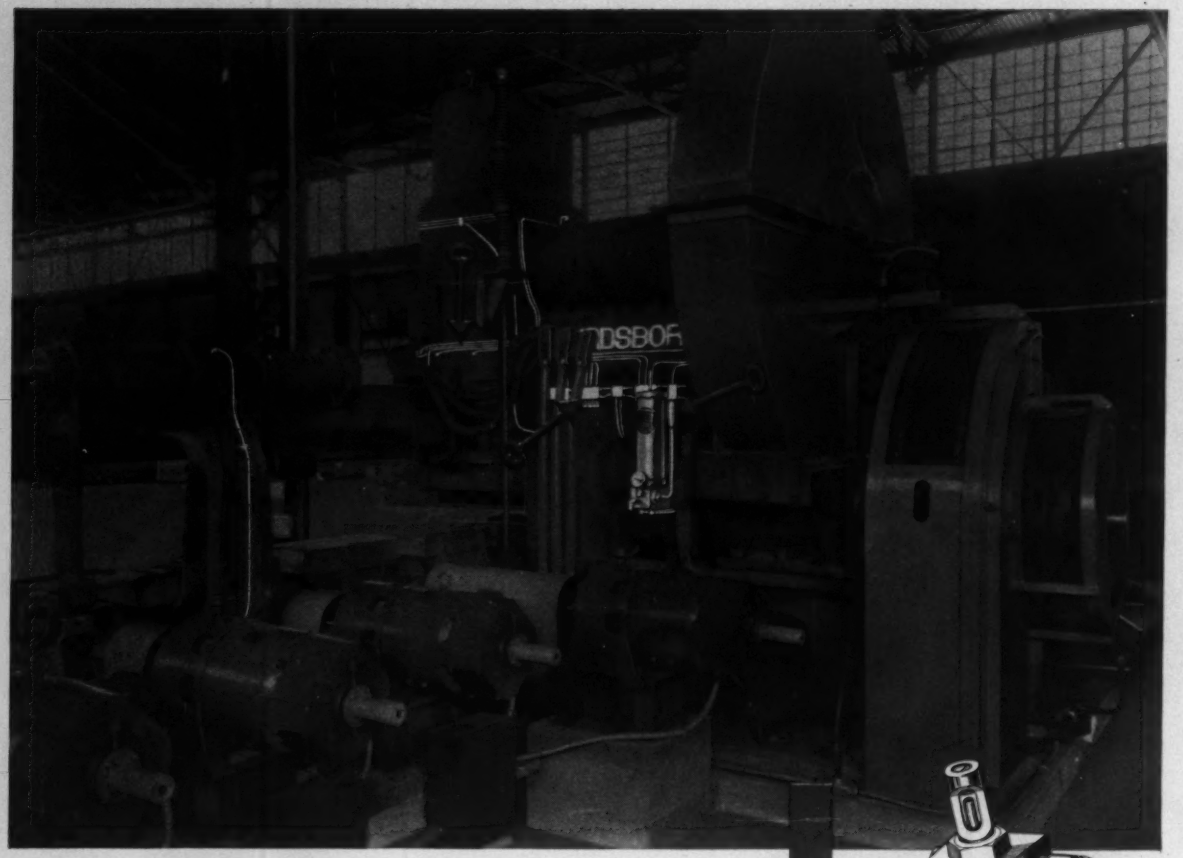
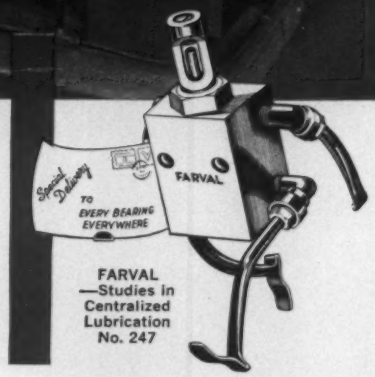
ENGINE, TURBINE OR MOTOR DRIVEN



New DMR-3 two-stage air compressor with integral control. Ratings of 300-350 hp.

NEW
COOPER-BESSEMER
DMR-2 TWO-STAGE
AIR COMPRESSOR
WITH
EN-TRONIC CONTRO
100 TO 250 HP





FARVAL
—Studies in Centralized Lubrication
No. 247

Farval centralized lubrication protects 24 vital bearings on Birdsboro cold bar shear

This rugged Birdsboro Cold Bar Shear, installed in a leading Mid-Western steel producing plant, will never have to go "off production" due to bearing failure.

That's because a modern Farval Centralized System protects the shear's 24 vital bearings. With a few strokes of the master pump lever, the operator knows all bearings are adequately lubricated.

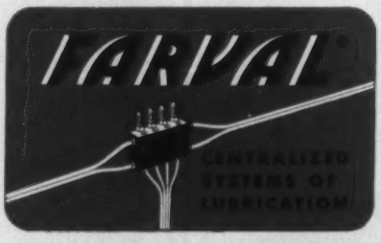
Wherever steel is produced or fabricated, you'll find all types of Farval Lubricating Systems protecting bearings and prolonging life of metalworking machinery.

Call us today and a Farval specialist will gladly show how these centralized lubricating systems will save production, maintenance, and labor time in your own plant. Or, write for free revised Bulletin 26-T—it gives the complete "Farval Story".

The Farval Corporation, 3270 East 80th Street, Cleveland 4, Ohio.

KEYS TO ADEQUATE LUBRICATION

—wherever you see the sign of Farval—familiar valve manifolds, dual lubricant lines and pump stations—you know rolling mill equipment is being properly lubricated.



Affiliate of The Cleveland Worm & Gear Company
A subsidiary of Eaton Manufacturing Company

Steel Settlement Means:

1. Banner Production Year

2. More Inflation Ahead

THE STEEL settlement will allow industry to go on a production bender in 1960—but the inflation hangover is sure to follow.

Metalworking sales of $156.5 billion should be readily reached this year, and the gross national product will exceed $500 billion by a comfortable margin.

• **Plenty of Metal**—With no serious shortages of steel or any other material to worry about in 1960, most metalworkers think they'll experience a banner year. Listen to:

Judson Sayre, president of Norge Div., Borg-Warner Corp., speaking about appliances: "We think the settlement will further solidify consumer confidence."

L. L. Colbert, president of Chrysler Corp., speaking about autos: "The settlement is the most welcome news we could hear. It makes possible the fulfillment of the highest production schedules ever established."

A fastener manufacturer: "It's full speed ahead for 1960 now that the last roadblock has been removed."

C. C. Caditz, president of Northern Metal Products Co., a stamper: "We're glad to see the strike settled even though we are not happy about the prospective price increase."

• **Worry About Prices**—Metalworking men aren't so jubilant about the settlement when the conversation turns to steel prices. Nine of ten executives interviewed by STEEL think quotations will be raised eventually. While they note that U. S. Steel Corp. proposes to "continue the general level of its prices for the immediate future," they're all asking: How long is the immediate future? Most think it won't be longer than next Dec. 1 when a 7 cent wage boost goes into effect (see Page 36 for details on the settlement).

History justifies their pessimism about price changes. Here's how average base steel prices have climbed since 1949, including only those gains announced after new wage increases:

1949—$4.00	1954—$3.00
1950— 5.50	1955— 7.35
1951— *	1956— 8.50
1952— 5.20	1957— 6.00
1953— 4.00	1958— 4.50

*Korean War controls delayed price action until 1952.

Total hourly employment costs rose in each of those years too, doubling from $1.753 in 1949 to $3.513 in 1958. From 1958 to the first half of 1959, employment costs jumped again, to an average $3.704—but no price increase occurred last year.

Thus no price increases helped offset the employment cost gains in 1959, making imperative some relief for the additional costs to be incurred by the new settlement. A rule of thumb: Every penny gain in employment costs means a 40 cent increase (directly and indirectly) in making each ton of steel. So the new 40 cent wage pact will hike steelmaking costs $16 a ton over the term of the contract. The industry's earnings averaged only $9.56 a ton in 1958, the last year for which figures are available.

A Pennsylvania forging manufacturer echoes the consensus: "Steel price hikes are inevitable. They'll probably come late in 1960 and be on a selective basis, chiefly on those products where the foreign competition is not so severe. Steel users will have to absorb much of the boost."

• **Foreign Competition**—Most executives checked by STEEL were alarmed about the settlement's effect on competition. "I'm disappointed," says William L. Wearly, president of Joy Mfg. Co. "Although the settlement will help our domestic sales, it will widen the spread between U. S. and foreign wage rates, taking business and jobs out of America. To maintain our foreign markets, we'll have to build more plants abroad."

Foreign steelmakers have been able to sell steel in this country at prices up to $40 a ton under those quoted by American mills. The

Highlights of the Settlement Terms

(Contract expires June 30, 1962)

DIRECT WAGE INCREASES

Dec. 1, 1960—7 cents an hour plus 0.2 cent an hour increase in the differential between wage classification increments. There are 32 classifications.

Oct. 1, 1961—7 cents an hour plus 0.1 cent an hour increase in the differential between wage classification increments.

COST OF LIVING

17 cents an hour existing cost of living factor will be continued. Bureau of Labor Statistics index of 123.8 becomes the new base.

If October, 1960, index exceeds that base, an increase based on the former cost of living formula will be applied—increase is limited to 3 cents. Same applies for BLS index in August, 1961.

Cost of living increases may be canceled if the insurance costs of U. S. Steel Corp. (pilot company) exceed 13½ cents an hour and it has exhausted its $2 million insurance reserve fund.

LOCAL WORKING CONDITIONS

Joint union-management committee—chaired by a neutral third party—will study local working conditions and make recommendations by Nov. 30, 1960. There are no arbitration provisions.

INSURANCE

Companies pay total costs. Life insurance benefits are increased $500. Sickness and accident benefits are increased $11. Estimated additional costs to companies: 6 cents.

PENSIONS

Formula for determining pension increases the minimum benefit from $2.50 to $2.60 for each month of service after Jan. 1, 1960. It increases the minimum benefit to $2.50 for service before Jan. 1, 1960.

Special retirement pay—lump sum upon retirement equal to 13 weeks of vacation pay (estimated average: $1500).

SUPPLEMENTARY UNEMPLOYMENT BENEFITS

Existing formula will be renewed. The 2 cents an hour contingent liability which was dropped when the strike began will be restored.

chief advantage lies in wage rates that have been one-third to one-seventh of those in the U. S.

Interestingly, the 40-cent package granted to American workers compares with a total wage of 46 cents an hour for workers in Japanese mills, one of our more formidable competitors.

• **Billion Dollar Bundle**—Another point made by many executives: David J. McDonald got the billion dollar bundle he was talking about in advertisements early in 1959. "We were all sneering at his demands a year ago," recalls the president of a machine tool company, "but he got what he said he was after." The steel industry figures that the direct cumulative cost of the pact will total more than $1 billion over 30 months.

Mr. McDonald got what he was after in another area, too—work rules—most executives believe. Comments like "industry capitulated" and "this is the worst defeat of all" are common. The president of an engineering and construction firm adds: "The work rules issue was badly handled. I hope I'm wrong, but I'll be amazed if anything good comes out of this open-ended committee that's supposed to study the question."

Laments a railroad equipment maker: "The steel contract torpedoes the rails' fight against featherbedding."

• **Effects on Other Labor** — Joy Mfg.'s Mr. Wearly says: "The steel pact is certainly an inflationary move regardless of whether prices are raised because steel sets wage patterns in many other industries."

About half of all major collective bargaining agreements expire in 1960, according to the Bureau of Labor Statistics. More than 120 contracts covering 5000 or more run out in the coming year and another 60 permit reopening on wages. The largest number of expirations will come in the second quarter, just in time for the steel terms to sink in. Major contracts come up in coal, mining, railroads, aircraft, communications, and shipbuilding.

In addition, thousands of contracts that have already expired have been held up in metalworking awaiting

Here's How Metalworking Reacted

"We lose all along the line. In the last go-around, we were able to get an increase in our selling price to offset our costs. This time, our costs will be increased without a chance for recovery through price increases. We will not be able to raise our prices due to our competitive position. Our only hope is more business and greater productivity."—Arthur Lehr, president, Bliss & Laughlin Inc.

"Consumer confidence, demonstrated by the willingness to buy appliances in the face of the strike, has been wonderful. I think the settlement will further solidify this confidence. We do not intend to cut back on our orders. We do not intend to raise our prices and will absorb increased costs except under extreme circumstances."—Judson Sayre, president, Norge Div., Borg-Warner Corp.

"With all respect due to the parties directly concerned with the peaceful settlement of the steel controversy, the granting of a 39 to 40 cent per hour package increase can serve only to worsen the competitive position of U. S. industry in the world markets."—Ray R. Eppert, president, Burroughs Corp.

"The strike settlement which insures continued steel production is an assuring note for employment and production. The real impact is the degree to which it will or will not affect prices."—R. S. Stevenson, president, Allis-Chalmers Mfg. Co.

"There is no doubt that the steel settlement is inflationary. It drives another nail in our coffin so far as our ability to compete in the world market is concerned."—Julian C. Pease, president, New Britain Machine Co.

"The steel settlement was unsatisfactory in view of management's stated objective and offers. We believe this to be the inevitable result of a faulty concept throughout, namely, arms-length bargaining. Application of a management-customer attitude has marked the enlightened, realistic turning point for many companies in their labor-management relations. It's an approach desperately needed today."—Thomas F. Morris, vice president-industrial relations, SKF Industries Inc.

"We're right in the middle of negotiations ourselves. The steel pact makes it most difficult, if not impossible, for us to retain our management rights. To us, the settlement represents a complete industry capitulation. It's a tragedy. It makes Kaiser look like a genius."—Machine tool builder.

"We're disappointed that no appreciable progress was made on the vital issue of work rules. In the fastener industry, we are well aware of the need to meet foreign competition by taking full advantage of technological improvements. The steel companies had a story that could have been sold—it's astounding that the battle for minds was lost. The companies apparently gave in because they feared political repercussions." — Vice president of fastener making firm.

"We had not planned on a price increase this year. Our price increases since 1957 have barely covered our labor cost increases and have not covered boosts in material costs. If a price hike in steel comes, we will have to consider raising our prices."—T. L. Strimple, president, National Acme Co.

"It will be unfortunate if a price increase follows the settlement. We hope to hold the line on prices if the steelmakers hold theirs."—O. W. Carpenter, president, Chain Belt Co.

"We all welcome industrial peace, but what price did we pay for it? If wages are increased regardless of productivity, and higher prices follow, we have merely increased consumer resistance and have in essence subsidized foreign competition."—Robert G. Allen, president, Bucyrus-Erie Co.

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the steel settlement. Forty are in the Cleveland area alone.

• Summary — Comparisons were made last week purporting to show that the aluminum, can, and Kaiser pacts were less expensive than that negotiated by the 11 steel companies. Their chief negotiator, R. Conrad Cooper, denied this in a letter to Labor Secretary James Mitchell.

If the other terms, said Mr. Cooper, had been applied to the steel companies' situation, they would have cost them 4.5 to 5 per cent a year. Terms the steel firms actually won cost 3.5 to 3.75.

Nevertheless, metalworking's immediate reaction to the settlement was pessimistic. Here's the consensus of more than 50 executives quizzed about the steel pact: It's good for short-term business. It's bad for the long-term fight against inflation. It's a defeat in the battle against featherbedding. It gives added emphasis to fringe concessions. It proves again the danger of government-pressured settlements.

Pittsburgh Won't Sign

Late last week Pittsburgh Steel Co. had refused to sign the Big Steel agreement unless it received special relief on incentives. It says its workers average 46 cents an hour more than the rest of the industry.

The United Steelworkers is willing to reopen its contract with Kaiser Steel Corp. to give it the benefit of the longer term pact granted other major steel companies. Kaiser's pact expires a year earlier than the other companies'.

Machine Searching: Boon to Research

In Simple Terms, Here's How Machine Searching Works

Abstracts are encoded in language like "cablese" on standard IBM cards.

Key to proper category added to card and information transferred to paper tape.

Question arrives and is encoded.

Searching selector is programed, scans tape.

Index to relevant material automatically typed.

Service will be offered by the American Society for Metals, starting about Feb. 1. GE Information Service Selector can handle 100,000 abstracts an hour

NOW YOU CAN search metallurgical literature faster, with greater accuracy and thoroughness, at less cost. Reason: About Feb. 1, the American Society for Metals, Novelty, Ohio, will open its Metals Documentation Service. It'll offer electronic searching of reference material.

To give you an idea of the saving: It costs you roughly $20 an hour to maintain one man in your research laboratory, estimates Marjorie R. Hyslop, of ASM.

Say a researcher spends two weeks in a library, looking for literature on a subject. That means $1600 is shot before the benchwork is started. Not only is it expensive, but the researcher may not find the desired information. Even if he does, the search may be incomplete. An alternative, searching by a qualified technical librarian, runs about $7.50 an hour, plus typing and clerical charges, reports Mrs. Hyslop. So it's often cheaper to run tests than to search for previous work in spite of needless duplication.

• **How It Works**—Three plans are offered.

1. The "current awareness" search will provide up-to-date information on a specific problem in the form of abstracts sent to the subscriber every two weeks. Cost: $300 a year.

2. "Generic" searches will provide the same semimonthly current awareness on questions of wide interest for $200 annually.

3. Bibliographic searches of previous literature on any subject or subjects will be prepared upon request. The cost will vary with the complexity of the searches and time required. Until the MDS abstract library is built up, bibliographic searches will be supplemented with conventional library procedures.

Key to the service will be a General Electric 250 Information Service Selector which can handle 100,000 abstracts an hour. Its cost: $100,000. The selector is like a computer in that logical configurations similar to those used in digital computers are employed. Computer devices such as a magnetic tape unit with an electric typewriter with perforated tape attachment are part of the equipment. Other makes of computing equipment may also be programed for information searching.

A simplified version of how the machine works is shown at the left.

One of the main chores of the documentation service is the development of a "dictionary" or key of searching terms. The terms, punched on the cards and tape, provide, in a sense, a cross index. Example: The code for "induction heating" permits searches for "electrical heating equipment," "heating equipment," and "heating."

• **What It Won't Do**—ASM's service will not do your thinking for you. It won't solve problems. Machine searching only facilitates information gathering. It is a rapid means of finding abstracts which may be of value. The abstracts are merely indicative, hence extremely brief. You must glean the desired information from the original article. Questions and topics

should be as specific as possible to avoid extraneous sources.

• **Joint Project**—The ASM project is a co-operative effort of the society and the Center for Documentation & Communication Research, Western Reserve University, Cleveland. The WRU center was founded in 1955 to concentrate on building the first taped library of metallurgical information. Early work was done with a machine developed by Dr. J. W. Perry, the center's didector, and Allen Kent, associate director.

The center has received a $159,200 grant from the National Science Foundation for a large scale test program to evaluate its mechanized systems for searching out scientific and technical data. More important to you, the grant will help build the abstract library. The National Science Foundation will contribute 20,000 to 30,000 abstracts annually. ASM will abstract about 12,000 papers annually. Between 40,000 and 50,000 abstracts have already been encoded.

• **Global Impact**—Interest in machine searching is world-wide. Last September, an International Conference for a Common Language for Machine Searching & Translation was held in Cleveland. Ten countries, including the USSR, were represented, and 75 papers were submitted. An international committee to study machine searching was a major achievement.

Russia set up a central institute for abstracting and disseminating technical information in 1952. Work with machine searching is moving along rapidly. Some consideration has been given for a similar center in this country. However, it seems more practical to develop a series of integrated regional and national centers, believes Mr. Kent, since there are already over 312 independent abstracting services now operating in the U. S.

Machine searching not only has great potential in literature searching as a research tool but also may find applications in recording data, record keeping, scanning company reports, employment files, and a host of other areas. It may well revolutionize library science. But its eventual success will depend on the coding methods used.

Hunting New Customers? Here's How Park Did It

PARK DROP FORGE CO., Cleveland, suspected it wasn't tapping the full potential of its market. Problem: How can a company expand its business by increasing the number of customers in established, as well as new fields? How could it find new customers requiring forgings that Park could produce economically?

In 1957, the well established firm with an old line product began a fresh, modern marketing approach. During 1959 alone, there was well over a 10 per cent increase in accounts as a result of the effort, reports William A. Humel, vice president and general manager. "And it will probably be two more years before the full effects of the program are felt," he adds.

• **How They Did It**—With the help of N. R. Ladabouche & Associates, Cleveland market research organization, Park held conferences with its sales people, discussing customers' SIC listings and forging requirements. Result: A list of three and four digit SIC groups which might use Park forgings was compiled. Questionnaires, designed to determine forging requirements, were sent to firms in prime user SIC categories.

A good response pinpointed the end products incorporating forgings and details about the forgings used. Only questionnaires from firms whose needs suited Park's market were kept. The percentage of each area in which Park was interested and the total poundage involved were estimated. Then a list of prime prospects in each SIC group which offered the greatest sales opportunity was compiled. A program of personal calls supplemented with direct mail promotion was begun.

• **Salesmen Benefit**—Equipped with a list of definite prospects who could use Park forgings, the salesmen were loaded for bear. They knew the number, weight, and kind of forgings, and the applications in which they were used. They were aware of the prospect's forging problems before contacting him and were prepared with case histories showing how Park had helped other firms with similar forging requirements. The response to both the personal and mail approach was "phenomenal," says Mr. Humel.

Park is now redistricting its sales territories so the salesman in each region will be well suited to handle the particular type of forging developments in the area.

• **Park Today**—The 52 year old firm, which in 1937 produced the first impression die forging over 800 lb, employs over 500. Its manufacturing and office facilities cover 10 acres. Park also controls Ohio Crankshaft Co., Cleveland.

Over $2.5 million has been spent on plant modernization in the past five years. Forging equipment, including heavy hammers, presses, handling equipment, and continuous rotary furnaces were major installations. The heat treating facilities and a substantial portion of the forge furnaces have been converted to natural gas. The balance will be changed in 1960.

Crankshafts used in diesel, gasoline, and other engines account for a major part of the firm's business. It is extremely selective about romantic work in missiles, rockets, exotic metals, and the like. Park operates like a supermarket—each square foot of floor space must earn so much or its application is changed.

Chicago Steel Imports Up

Waterborne imported steel unloaded in Chicago totaled 37,777 tons in November, a jump of 34 per cent over October imports.

Of steel arriving by water in Chicago, 28 per cent consisted of structural items, 31 per cent plates, 13 per cent wire rods, 11 per cent sheets, 8 per cent bars, 7 per cent wire, 2 per cent tubing and pipe.

A new direct ore reduction process shows promise costwise . . .

Arc Furnace Iron Competes

PILOT PLANT studies indicate that capital equipment costs for a new iron refining process, called Orcarb, will run only about half those for blast furnace facilities. Production costs per ton of iron will be about equal.

Those conclusions have been reached by Swindell-Dressler Corp., Pittsburgh, after several months of work with the process at its pilot plant in Indianola, Pa. Inventor is C. E. Lesher, consulting engineer, formerly associated with Jones & Laughlin Steel Corp.

• The process combines ore agglomeration, rotary kiln reduction, and electric furnace melting. Besides low capital investment, it promises raw material flexibility, and low power consumption.

The process requires only half as much carbon (obtained from high volatile coal) as a standard blast furnace. And it handles ore fines or concentrates in pea size particles or in powder form.

Ore is reduced to about 80 per cent metallic iron before it goes into the smelting furnace. That cuts power requirements for melting. The pilot plant uses less than 1000 kw to produce a ton of iron; better economy is expected in commercial production.

• Ore and flux are preheated, mixed with coal, and agglomerated. Further heating carbonizes the coal.

Flux and iron ore are heated to about 1100° F in a direct fired, rotary kiln. Fine, high volatile, coking coal is then introduced in a mixer.

The mixture, at 600 to 700° F, is fed continuously into an unlined steel retort that revolves at a peripheral speed of 80 to 90 ft a minute.

Temperature of the mixture is increased by indirect heating through the retort shell. That carbonizes the coal.

When the coal becomes plastic, it picks up ore and flux. Then it is rolled into pellets that harden to low temperature coke at about 950° F. Coking time: 10 to 15 minutes.

Orcarb pellets are discharged into the reduction kiln.

• Iron ore, heated with carbon in a rotary kiln, is reduced to metallic iron.

Combustion of carbon monoxide, produced during the reaction, supplies heat for reduction.

A relatively deep bed of Orcarb is heated to 1700 to 1900° F for 1 hour or longer. Iron oxides in the bed are substantially reduced.

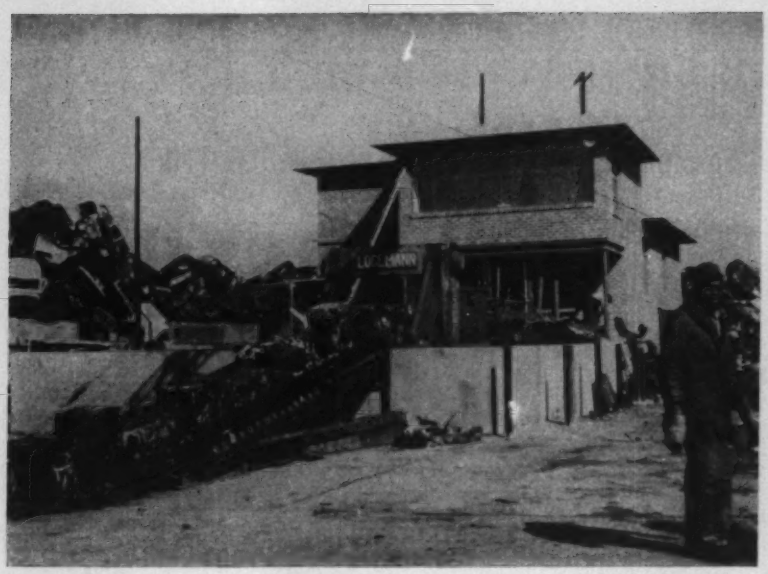
The reduction kiln is 2½ ft in diameter and 20 ft long, with a refractory lining. Provision is made for sampling kiln gases and material in process at several points along the length of the kiln; temperatures are recorded at several points.

Reduced charge material doesn't ring or build up on the inside of the kiln. The material can be held in the kiln 1½ to 3 hours.

• Prereduced material passes into an electric arc furnace for further refining.

Material enters the smelting furnace through a roof connection from the kiln. It is analyzed every hour to determine percentage of reduction. Gases from the furnace pass into the kiln.

The furnace, which has a hearth diameter of 2½ ft, is tapped at intervals; metal is cast in a ladle, or in sand.



Consumption of Purchased Scrap--1950-1960

(Gross tons)

1960	30,000,000*
1959	24,000,000*
1958	22,127,000
1957	29,618,000
1956	35,109,000
1955	34,511,000
1950	29,402,000

*Estimated

Can Scrap Make Comeback?

THE SCRAP industry expects 1960 to be a good year, but it continues to be concerned about the downtrend in purchased scrap brought about by technological advances in steelmaking.

Processors and brokers are seeking an answer to the problem at the annual convention and exhibit of the Institute of Scrap Iron & Steel Inc., this week at Miami Beach, Fla.

• Peak consumption of purchased scrap was in 1956. Industry used 35.1 million gross tons to turn out 91.7 million gross tons of steel.

After two successive years of decline, use was up slightly last year (24 million tons were used to produce 82 million tons of steel). Outlook for '60: About 30 million tons of purchased scrap. (See table for yearly figures.)

At first glance the data seem to show a substantial rise in scrap consumption is underway. However, the ratio of consumption to steel production is still declining. For example: It was 39 per cent in 1956, 30 per cent in 1957, 32 per cent in 1958, 29 per cent in 1959, and is expected to drop to 27 per cent in 1960.

• Has the downtrend in purchased scrap hit bottom?

The industry is so deeply concerned that it has moved, in association with the steel industry, to foster a research program. The object: Upgrade purchased scrap so that it will be more acceptable to today's quality conscious steelmaker. Many scrapmen feel that only through improving the quality of their offerings can they hope to recoup lost ground and escape marginal or standby status.

That's an unjustifiably gloomy view, say some observers, especially considering scrap's important role in the conservation of natural resources. But there's little question trade will continue sorely beset by the impact of technological changes in the steel industry—such as oxygen melting, which is more flexible in terms of dependence on scrap.

• Most scrap processors think they'll find the way out of their dilemma if they'll adjust their practices quickly to the new marketing conditions.

That means more efficient collection, sorting, grading, and handling, to meet the requirements of increasingly critical procurement. It may even mean the dropping by the wayside of dealers and processors who can't rise to the technological and financial challenge. Eventually, the industry may become smaller—it's now composed of over 4000 dealers and brokers.

• Where did the purchased scrap come from last year? The institute estimates that of the total supply of 28 million tons, 9.5 million originated in metalworking plants, including auto shops.

Another 650,000 tons were generated in the nation's foundries. The railroads provided 3 million tons; old automobiles another 3 million; the demolition of such structures as buildings, bridges, and industrial plants 1,250,000; the nation's farms more than 1 million; shipbreaking around 750,000; detinning operations about 200,000; and public utilities 350,000 tons.

Mines, incinerators, and other operations at dumps; general collections; housing repairs and maintenance; government agencies; and oil fields and refineries accounted for most of the remaining tonnage shipped during the year.

As Congress Goes into Session, These Topics Create Corridor Talk: Foreign Competition . . . Expense Accounts . . . 1960 Campaign Issue

The Need to Protect U. S. Firms . . .

. . . against imports will be brought home to Congress this session, predicts Horace B. McCoy, new president of the Trade Relations Council. (He is the former chief of the Business & Defense Services Administration.) The TRC plans to spread the word about the threat of imports by conducting regional meetings around the country. Particularly dangerous to U. S. markets, says Mr. McCoy, is the "emergence of rival trading blocs in western Europe." Competing against each other, the blocs will tend to discriminate against the U. S.

Action on Foreign Competition . . .

. . . by the Congress will probably be delayed until 1961. The current session will probably be short, adjourning in time for the two major parties to pick their Presidential candidates in July. But there is a chance that this year a Congressional committee might start an investigation of some issues relating to foreign competition. Mr. McCoy doesn't think there will be a return of old fashioned protectionism; he looks for a re-evaluation of government policies affecting trade, particularly in the light of the "growing inflationary forces" making the U. S. a high cost producer.

U. S. Missilemakers Are Worried . . .

. . . about foreign competition too. Following cancellation of the Dart antitank missile (a domestic program), it turns out that no less than four foreign made or designed antitank weapons have the inside track for Army and Marine use. In some cases, U. S. firms are licensed to produce the weapons here. In other cases, the missile would be built overseas. The importance to potential American manufacturers: Possibly 1 million birds of this type will be needed within three years.

Tighter Curbs on Expense Accounts . . .

. . . of businessmen seem inevitable. The Internal Revenue Service is looking hardest at vacations entered on expense accounts as attendance at conventions, exemptions allowed for country club dues, and other expenses which fall into the category of "high living." The IRS has announced it expects more detailed records of expenses to be kept in the future, instead of allowing items to be lumped under "general" expenses.

School Construction Programs . . .

. . . of the federal government have more than the usual political overtones this year. The Democrats are certain to push for a huge new school program with the hope that President Eisenhower will veto the measure. In the fall, the Democrats will attempt to make that into one of their most important campaign issues.

Defense Issue: Is It Dead? . . .

. . . one of the problems facing campaign strategists is whether to play up the so called defense-space lag between the U. S. and the USSR. In the Democratic camp, Sen. Stuart Symington (Mo.), regarded by some as the man who first publicized the missile gap between the U. S. and Russia, has been playing the defense tune in a minor key the last few months. Other Democratic Presidential hopefuls have failed to come forth with programs for catching the Russians.

On the Republican side of the aisle, no candidate has come forth with anything more significant than Governor Nelson Rockefeller's report of two years ago calling for a massive program for civil defense shelters. Because of the real or imagined thaw in the cold war, both parties are unable to come up with a platform on defense which doesn't sound like "doom" talk.

Steel Strike Sidelights . . .

. . . are turning up on all sides. One of the more interesting comes from a highly placed staffman of the United Steelworkers, who notes that the pressure is on USW President Dave McDonald to say a few kind words for Vice President Richard Nixon as the Presidential campaign draws closer. Seems that Dave McDonald has been closer to Mr. Nixon for the last few years than a lot of people have suspected. The strike settlement announced last week is viewed by these sources as tantamount to the Steelworkers not coming out for the Democratic candidate next November. The alternative: Hold back approval of either major party. Such neutrality, the sources argue, is equal to approval for the Republicans.

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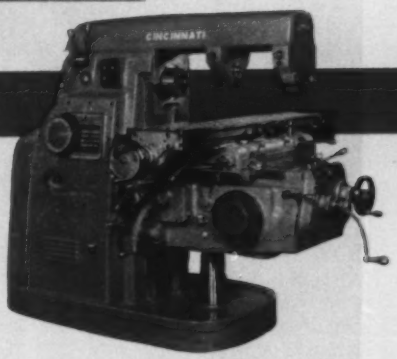
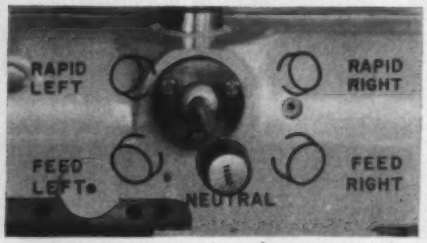
PUSH-BUTTON SELECTION *of 24 spindle speeds, throughout 16 to 1600 rpm range (18 to 1800 rpm for No. 210-12 Dial Types).*

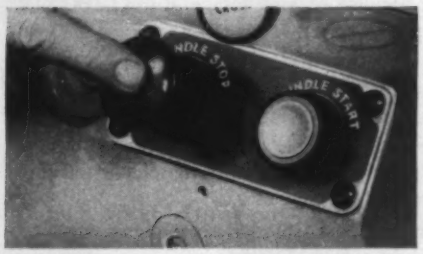
EASY DOES IT

. . . for Dial Type Operators





FIVE-POSITION LEVER *gives the operator complete one-hand control of table (automatic cycle machines).*



PUSH-BUTTON STARTING AND STOPPING *of spindle rotation. The operator gets quick action and automatic braking.*

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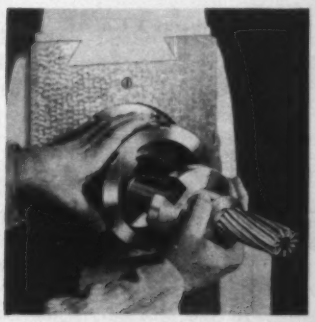

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• CUTTER AND TOOL GRINDERS • ELECTRICAL DISCHARGE MACHINES

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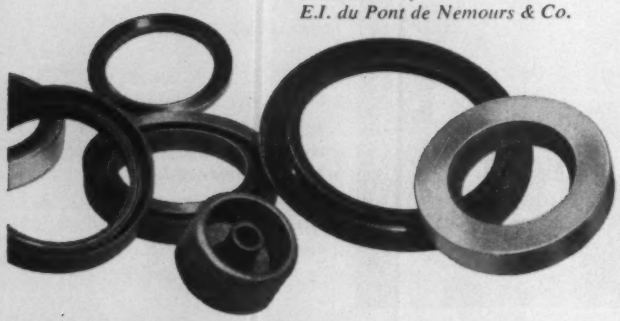

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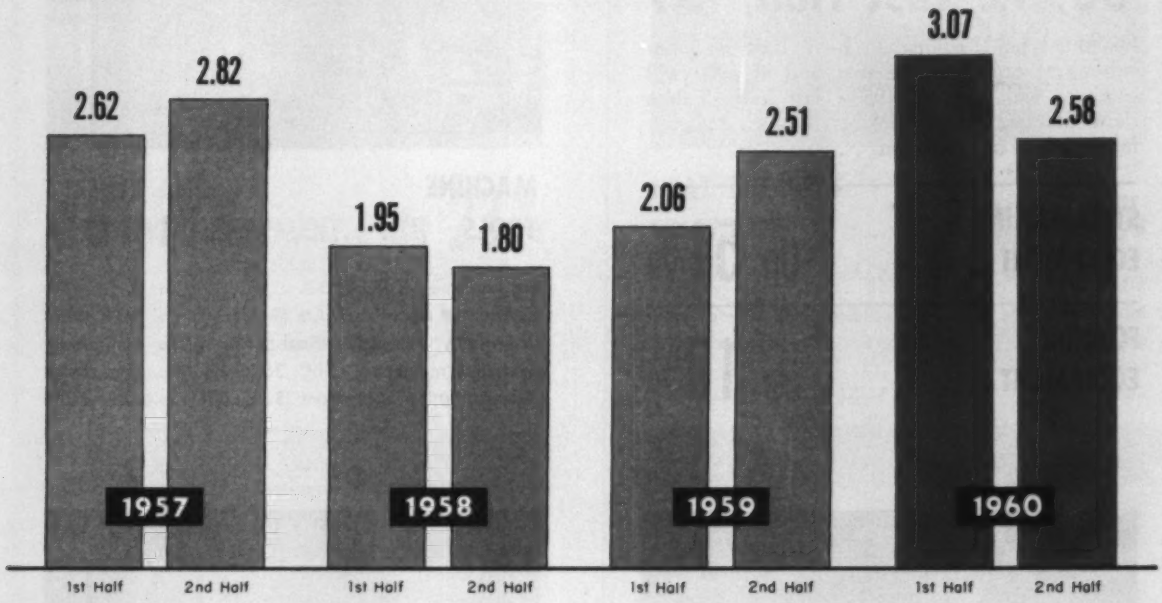
Metalworking's Capital Equipment Purchases



PRODUCTION EFFICIENCY

How Much Will $5.65 Billion Buy?

RECORD SPENDING for capital equipment. That's in prospect for metalworking this year. The industry plans to order $5.65 billion worth of equipment in the coming 12 months—24 per cent above last year's purchases.

The bulk of the orders—$3.07 billion worth—will be placed during the first half. That's 22 per cent more than the volume let during the last half of 1959. It's a vigorous, 49 per cent leap over the '59 first half volume.

But that $5.65 billion will buy far less production efficiency than metalworking needs. If the money were available, metalworking companies would spend $20 billion for new equipment this year.

Those startling sums are revealed by STEEL's latest survey of metalworking's equipment buying plans. Companies in a selected group, which buy more than one-third of all the equipment purchased by the metalworking industries, told STEEL, confidentially, their equipment buying plans for 1960.

Every industry surveyed will order more equipment during the current six months than it did in the last half of 1959 (see table on Page 48).

It signals a busy—and profitable—year for manufacturers of all types of equipment used by the metalworking industries. Hefty increases in orders are predicted for the nine major type of metalworking equipment (see Pages 46-47).

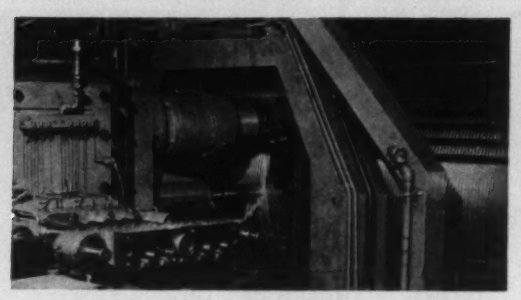
For metalworking, it indicates record sales and earnings. In 1956, when equipment purchases soared to $4.85 billion, metalworking's sales climbed to $133.6 billion. In 1957, when equipment buying reached a record $5.44 billion, metalworking's sales hit another peak—$141.2 billion. Spending for equipment dropped to $3.75 billion in 1958; the industry's sales plummeted to $122.3 billion. Last year, equipment outlays began a new up-

Orders Up in 1st Half, '60, vs. Last Half, '59

For nine types of equipment, here's how the dollar volume of orders in the first half of 1960 will compare with that of 1959's last half Tables show planned order increases by each industry for each type of equipment. . .

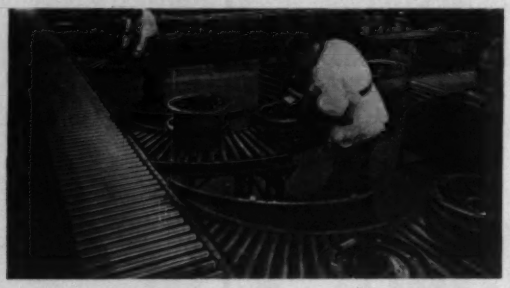
STEELMAKING EQUIPMENT . . . . . Up 51%

FOUNDRY EQUIPMENT . . . . . Up 10%



MACHINE TOOLS . . . . . Up 18%

Primary metals (S.I.C. 33)	31% More
Fabricated metal products (S.I.C. 34)	11% More
Machinery, except electrical (S.I.C. 35)	4% More
Electrical machinery (S.I.C. 36)	19% More
Transportation equipment (S.I.C. 37)	22% More



MATERIAL HANDLING EQUIPMENT . Up 20%

Primary metals (S.I.C. 33)	24% More
Fabricated metal products (S.I.C. 34)	21% More
Machinery, except electrical (S.I.C. 35)	19% More
Electrical machinery (S.I.C. 36)	34% More
Transportation equipment (S.I.C. 37)	9% More

JOINING AND ASSEMBLY EQUIPMENT . Up 19%

Primary metals (S.I.C. 33)	10% More
Fabricated metal products (S.I.C. 34)	9% More
Machinery, except electrical (S.I.C. 35)	31% More
Electrical machinery (S.I.C. 36)	26% More
Transportation equipment (S.I.C. 37)	10% More

swing, and metalworking sales hit a record $145 billion.

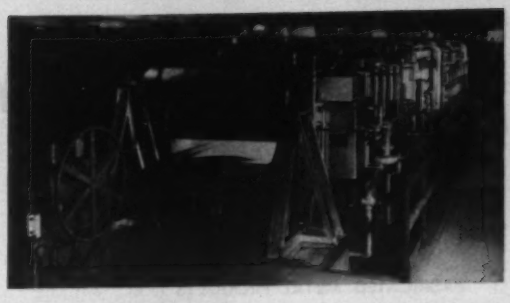
• **Dollar Record** — STEEL's survey results indicate that metalworking will spend a record amount of money for capital equipment in 1960—$210 million more than the previous peak, reached in 1957. But the industry probably won't buy a record number of machines. Reason: By July, you will pay, on the average, 8 per cent more for metalworking machinery than you paid in mid-1957. So a record in physical volume probably won't be reached. But metalworking is likely to buy a record amount of production efficiency. Equipment makers have made significant technological advances since 1957. You can produce more of your product at less cost on the average 1960 machine than on the '57 model.

That is probably the prime reason for the industry's big push in equipment buying.

• **Boosting the Buying**—Spiraling domestic labor costs and lusty foreign competition are forcing American manufacturers to trim their production costs at every point. The nation's industrial supremacy is at stake. In some areas, it's no longer a question of supremacy but one of

TESTING AND INSPECTION EQUIPMENT . Up 23%

Primary metals (S.I.C. 33)	14% More
Fabricated metal products (S.I.C. 34)	24% More
Machinery, except electrical (S.I.C. 35)	3% More
Electrical machinery (S.I.C. 36)	46% More
Transportation equipment (S.I.C. 37)	21% More



HEAT TREATING EQUIPMENT . . . . . Up 14%

Primary metals (S.I.C. 33)	29% More
Fabricated metal products (S.I.C. 34)	24% More
Machinery, except electrical (S.I.C. 35)	5% More
Electrical machinery (S.I.C. 36)	10% More
Transportation equipment (S.I.C. 37)	18% More

CLEANING AND FINISHING EQUIPMENT . . Up 52%

Primary metals (S.I.C. 33)	*
Fabricated metal products (S.I.C. 34)	59% More
Machinery, except electrical (S.I.C. 35)	6% More
Electrical machinery (S.I.C. 36)	28% More
Transportation equipment (S.I.C. 37)	39% More

*Up more than 100 per cent, reflecting several big steel company programs.

PRESSES AND PRESS BRAKES . . . . Up 19%

Primary metals (S.I.C. 33)	†
Fabricated metal products (S.I.C. 34)	44% More
Machinery, except electrical (S.I.C. 35)	7% More
Electrical machinery (S.I.C. 36)	5% More
Transportation equipment (S.I.C. 37)	12% More

†Insufficient information.

survival. Metalworking managers reason that the best way to meet the challenge is through the better purchase and use of production equipment. Goal: Lower unit production costs.

• **On Condition**—The 116 day steel strike last year reduced metalworking's 1959 equipment outlays by an estimated $250 million. A few respondents say their plans are based on the assumption of a business upswing throughout 1960. If the sales outlook takes on a less optimistic note than is predicted, they say they will curtail some buying.

• **What It Means**—The buying upswing indicates that metalworking management recognizes the need for greater production efficiency. It proves that many managers believe the best route to more efficient production is through the purchase of modern machines. But they can't find the money for all the new equipment they need. The industry faces a $20 billion challenge—to put its plants in shape to counter foreign competition and inflation (STEEL will tell that story in the Jan. 25 issue).

• **To Builders** — For equipment makers, the buying boom signals a

All Industries to Buy More

(Equipment orders placed in 1st half 1960 vs. 2nd half 1959)

PRIMARY METALS (S.I.C. 33)	**Up 27%**
Steelmaking (S.I.C. 3312)	Up 31%
Foundries (S.I.C. 332)	Up 10%
Nonferrous metals (S.I.C. 333, 334, 335)	Up 11%
FABRICATED METAL PRODUCTS (S.I.C. 34)	**Up 18%**
Metal stamping (S.I.C. 3463)	Up 45%
MACHINERY, except electrical (S.I.C. 35)	**Up 17%**
Farm equipment (S.I.C. 352)	Up 14%
Machine tool (S.I.C. 3541)	Up 10%
Special industry machinery (S.I.C. 355)	Up 39%
General industry machinery (S.I.C. 356)	Up 14%
Office equipment (S.I.C. 3579)	Up 12%
ELECTRICAL MACHINERY (S.I.C. 36)	**Up 31%**
Electrical industrial apparatus (S.I.C. 361)	Up 44%
Electrical appliances (S.I.C. 3621)	Up 11%
TRANSPORTATION EQUIPMENT (S.I.C. 37)	**Up 36%**
Motor vehicles & parts (S.I.C. 3717)	Up 34%
Aircraft & parts (S.I.C. 372)	Up 37%
Railroad equipment (S.I.C. 3742)	Up 46%
ALL METALWORKING	**Up 22%**

return, at last, to high volume production.

Machine tool builders will have the best six months since the first half of 1957. New orders could equal nearly 60 per cent of the builders' capacity; in 1958, the rate was less than 30 per cent.

STEEL's survey indicates that machine tool builders will receive domestic orders for $271 million worth of metal cutting type tools during the first half. That compares with an estimated $230 million volume in the last half of 1959.

Makers of material handling equipment are due for their best period since 1956.

Producers of surface cleaning and finishing equipment can look for the largest percentage increase in orders—a 52 per cent jump. That big figure reflects several large programs planned by steel companies.

The survey predicts a 19 per cent order hike for joining and assembly equipment. That indicates orders for resistance welding equipment will exceed $16 million this half and over 14,000 industrial transformer welders will be ordered.

● **To Users**—The investment upswing is sharp in almost every segment of metalworking. Exception: Machinery manufacturers, who replaced a lot of their equipment last year while their sales were slow. The heftiest hike is planned by producers of transportation equipment. Leading the pack are the car divisions (many will show year-to-year spending increases of more than 40 per cent), aircraft and missile makers (rapid advances in fabrication methods force continuing large investments in new machinery), and producers of rail equipment (whose profits are finally rising to a range that will permit some reinvestment).

The widespread pattern of buying increases indicates that your competitors, no matter what industry you're in, are gearing up for greater efficiency.

● **Forcing the Spending** — Among the most significant influences behind the equipment buying boom:

1. **Foreign competition.** Many American manufacturers face severe sales rivalry from foreign firms whose labor costs are lower and whose production equipment is newer and more efficient. U. S. companies can do little about the difference in employment expenses, but they can narrow the gap in production efficiency by investing in up-to-date machinery.

2. **Price fighting.** The majority of metalworkers also face cutthroat competition on the domestic scene. Respondents to a STEEL survey of 7500 plants list price competition as the No. 1 problem in 1960.

3. **Profit revival.** Metalworking's 1959 profits rebounded sharply from the lows of 1958, permitting the untying of purse strings to make overdue purchases of new machinery.

4. **Market planning.** Some industries that were bemoaning excess capacity two years ago now find that they'll have to expand to meet the needs of the '60s.

● **2nd Half Outlook**—STEEL asked its survey participants about their preliminary plans for equipment buying in the second half of 1960. While such plans are subject to considerable change, they often indicate the direction of the investment trend. Metalworking companies now intend to order $2.58 billion worth of equipment during 1960's last six months. That's 16 per cent below the predicted first half volume, but it would be better than any other period since the last half of 1957.

The second half may not show a decline of that magnitude. Psychology plays an important role in equipment investment. Buying booms often last longer than anticipated because businessmen tend to change their plans in the direction of the business trend. And metalworking is generally expected to have modestly higher sales in the second half than in the first.

$20 Billion Challenge

That's how much metalworking would spend for new equipment this year if funds were not limited. It points up the desperate need for depreciation reform and smart purchasing. STEEL's second article in this series on Production Efficiency will appear on these pages Jan. 25. It will investigate those problems and suggest ways to approach them. For a free copy of each article in this series of 13, write: Editorial Service, STEEL, Penton Bldg., Cleveland 13, Ohio.

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Automakers Tackle 1960's Problems

Unitized bodies are noisy. Ford and GM ponder stub frame approach.

Decentralization ties up assembly lines when parts don't arrive. Are consolidated manufacturing centers the answer?

Diversification is S-P's goal at the moment, but the big firms question the wisdom of nonautomotive products.

Workers who can't fulfill simplest tasks worry both management and labor.

Threat of imports creates major marketing headaches. Look for the automakers to turn to legal tactics like tariffs, price fixing charges.

Quality requires continuous assault—industry will make its biggest push in a decade.

But Solutions Won't Come Easily

NOISE is the biggest problem in unitized construction.

Ford and General Motors have been watching Plymouth because it has done an excellent job of noise suppression in its stub frame unitbody without greatly increasing costs or weights. Most of the weight comes from heavier reinforcing steels in the integral frame members. Only 15 lb are contributed by additional deadening materials.

GM engineers claim simpler soundproofing is one of the reasons they'll follow the stub frame approach when the corporation begins switching to unitized construction. Ford may not wait. There's some talk that the 1961 Thunderbird will change to a stub frame unitbody.

• **Quality Questioned**—Detroit is making an effort to improve quality to keep pace with design advances. GM is adopting the reliability concept—it starts at the drawing board and is carried through final assembly and into shipment and replacement parts. Quality control is only part of the approach. AC Spark Plug Div. has initiated GM's reliability drive (see STEEL Aug. 3, 1959, p. 55).

Ford Motor Co.'s method is to put quality control teams on duty checking parts from design through assembly. It's emphasizing quality in materials.

Chrysler feels quality can best be achieved through improved assembly techniques.

• **The Unskilled**—Labor leaders admit one of their key complaints about automation is that it displaces unskilled workers who are unable to acquire even the simplest skills needed on automated lines. These men, who once comprised a large share of the UAW's membership, are shunted from job to job.

• **Imports** — Renault Inc., and Peugeot Inc., U. S. subsidiaries of the French auto firms, have denied the antitrust charges slapped against them by the Justice Department. Chances are the suits against them won't be pressed.

It's obviously impossible to prove that any American carbuilders have instigated such investigations, but look for more pressure for stricter

U. S. Auto Output

Passenger Only

	1959	1958
January	545,757	489,515
February	478,484	392,132
March	576,085	357,048
April	578,825	316,594
May	546,817	349,613
June	557,994	337,446
July	555,418	321,017
August	239,152	180,447
September	258,157	130,460
October	507,530	261,701
November	254,518	514,152
December	492,000†	593,920
Total	5,590,737†	4,244,045

Week Ended	1959	1958
Dec. 5	55,337	147,361
Dec. 12	86,056	137,882
Dec. 19	152,449	135,964
Dec. 26	103,219	104,907
	1960	1959
Jan. 2	111,574†	97,664
Jan. 9	155,000*	134,342

Source: *Ward's Automotive Reports.*
†Preliminary. *Estimated by STEEL.

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import car quotas. Such activities have little chance of success but may provide sales material until the automakers decide whether they want to add even smaller economy cars to their marketing lineup.

• **Decentralization Rebuffed**—Manufacturing centers clustered about assembly plants that serve marketing areas have been Detroit's trend the last five years. Now it appears that the companies either must add major components like engines and transmissions to these centers or consolidate the facilities elsewhere. Chrysler has already done that with engines which are built only at its Mound Road and Trenton engine plants in the Detroit area.

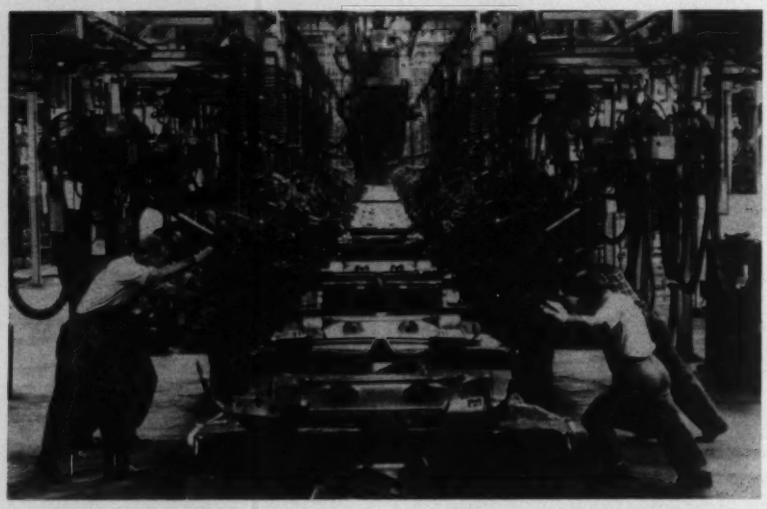
Ford is working toward it with its Ohio facilities.

GM has made no comment, but one such setup could be centered in Michigan's Saginaw Valley. Speculation pictures an arrangement whereby a power train manufacturing group would service all Buick-Oldsmobile-Pontiac (BOP) plants. The first step might see transaxles for all BOP cars built at Saginaw Steering Gear Div. Buick Div. could be responsible for engines. Central Foundry would provide die, permanent mold, and sand castings.

• **Diversification**—Merger talks between Studebaker-Packard Corp. and Oliver Corp., Chicago farm equipment builder, should be completed by March.

Diversification appears to be a sensible route for S-P to follow, but other carbuilders continue to question the value of their appliance subsidiaries.

Plymouth Revamps Assembly Plant



Plymouth has added 57,000 sq ft to its 1.24 million sq ft Detroit assembly plant. All body building has been brought into the plant instead of being done at separate facilities. Engine fabrication has been moved to Chrysler's Trenton Engine Plant. A continuous dip line for rust proofing bodies has been installed, and six new drying ovens have been located on the roof of the plant.

With its move to unitized construction, Plymouth has installed gateline fixtures on its final assembly line. They include 64 bases and 32 sets of side frame fixtures, and 339 welding machines have been installed. The final assembly line has been lengthened from 1000 to 1972 ft. Subassembly lines are relocated. A total of 146 overhead conveyors have been replaced by 127 new ones that do the same jobs.

Chrysler claims the changeover will contribute to better quality cars. There are 17 inspection stations and 210 quality control inspectors. Each body goes through nine different temperature changes, three metal cleaning baths, seven anticorrosive dips, seven spraying operations, and seven paint finishing operations. The anticorrosion process takes 1 hour 45 minutes. All bodies are subjected to a water spray test of 280 gallons per minute under 30 psi for four minutes before interior trim is installed.

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Cut your cost of possession by buying from your local Steel Service Center

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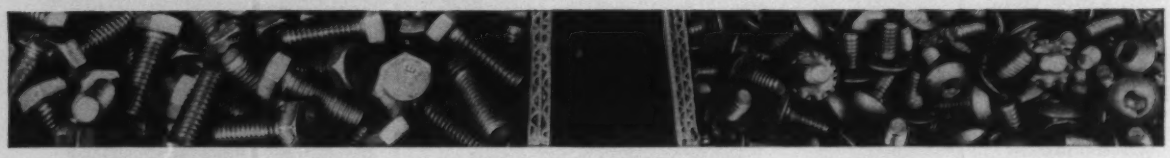
Picks up $97,000 saving in screws



Fastener survey by RB&W cites big saving in simple substitution of fastener types . . . no engineering changes needed

There were no engineering changes at all involved in this hard-to-believe case of cost reduction. The RB&W Fastener Man, called in to survey the use of fasteners in this particular company's machine, was asked to submit recommendations on a size for size substitution only.

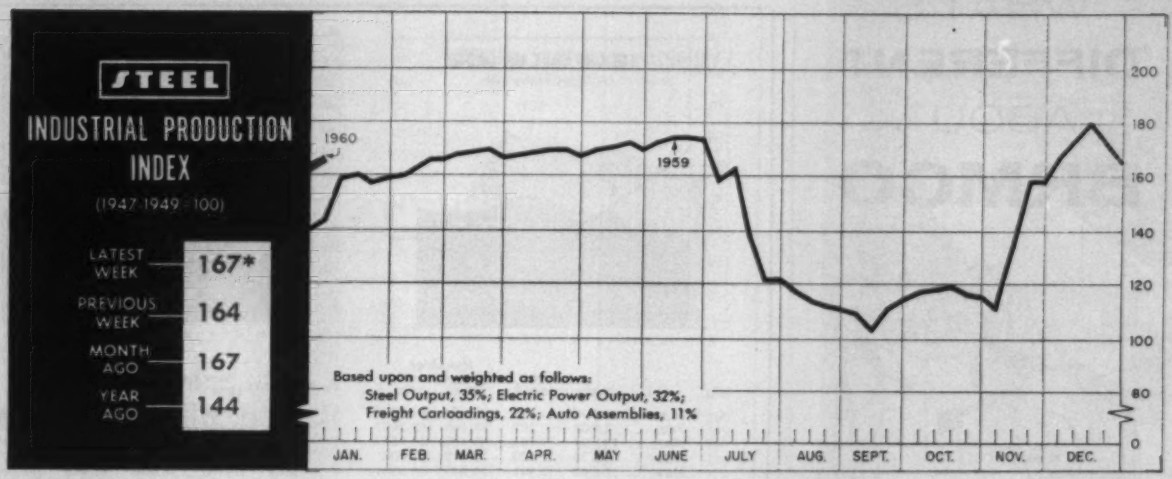
Annual production consumed about 1½ million fasteners. Since the RB&W fastener specialist saw neither a design nor appearance reason for the costly alloy fasteners being used, he suggested (1) clutch head screws to replace the existing alloy screws; (2) standard bright and high carbon hex screws to be used at all other locations. Just that simple. At prevailing prices, costs of parts studied totaled $120,000; cost of the suggested fasteners: only $23,000 . . . a whopping, realizable $97,000 saving. Pure profit!

Are you *sure* you're not wasting fastener dollars? True, the savings offered may be more modest than the special case above. But they're certainly worth looking for through the eyes of an RB&W fastener expert. No obligation. Write Russell, Burdsall & Ward Bolt & Nut Company, Port Chester, New York.

R B & W

115th year

Plants at: Port Chester, N. Y.; Coraopolis, Pa.; Rock Falls, Ill.; Los Angeles, Calif. Additional sales offices at: Ardmore (Phila.), Pa.; Pittsburgh; Detroit; Chicago; Dallas; San Francisco. Sales agents at: Cleveland, Milwaukee; New Orleans; Denver, Fargo. Distributors from coast to coast.



*Week ended Jan. 2.

Labor Peace Assures Business Climb

NOW that the biggest question mark in the 1960 economic picture —the steel strike settlement—has been removed, you can expect most business indicators to climb rapidly to all-time highs through the first half and remain near those levels the rest of the year.

Still to be answered is a mighty important question: What effect will steel labor peace and possible price increases have on inventory rebuilding? There is much speculation that considerable tonnage on the steel mills' books is a hedge against further interruption of supply lines. Assurance of steady supply could dry up some of the demand. But users are not likely to cancel a great deal until they have all the steel they can get at current prices. It will be some time before the dust from the labor-management battle settles and the new line of advance for 1960 is clearly discernible.

• **Where We Stand**—For the time being, the year is getting off to a fast start, thanks to both steel and auto production. STEEL's industrial production index climbed to a preliminary 167 (1947-49 = 100) during the New Year's week ended Jan. 2. It was 3 points above the Christmas holiday period. While the gain was smaller than in some recent years, it should be noted that the holiday slowdown also was less than usual.

Steel production for the week ended Jan. 3 climbed back to within whispering distance of the record of 2,732,000 ingot tons. At 2,726,000 net tons, the weekly operating rate was 96.3 per cent of the 1959 weekly capacity (based on annual capacity of 146,633,670 tons). Last week (ended Jan. 10) steelmen scheduled operations at 95 per cent of the 1960 capacity (based on annual capacity of 148,570,970 tons), which was good for 2,707,000 net tons.

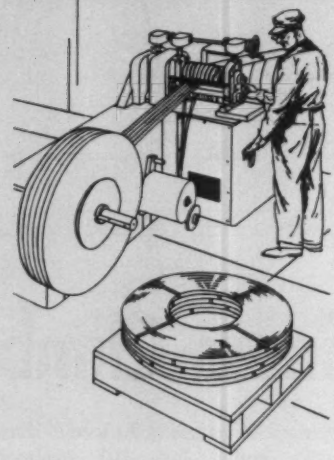
It is likely that output will stay around this level. Production will

BAROMETERS OF BUSINESS

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Production (1,000 net tons)[2]	2,707[1]	2,726	2,085
Electric Power Distributed (million kw-hr)	13,300[1]	13,400	12,364
Bituminous Coal Output (1,000 tons)	6,865[1]	9,095	6,526
Crude Oil Production (daily avg—1,000 bbl)	7,100[1]	7,109	7,122
Construction Volume (*ENR*—millions)	$191.0	$408.1	$273.2
Auto, Truck Output, U. S., Canada (*Ward's*)	136,852[1]	124,091	117,862
TRADE			
Freight Carloadings (1,000 Cars)	500[1]	469	468
Intercity Truck Tonnage (changes from year ago)	+7.5%	7.2%	...
Business Failures (Dun & Bradstreet)	195	285	185
Currency in Circulation (millions)[3]	$32,893	$32,924	$32,456
Dept. Store Sales (changes from year ago)[3]	+20%	+5%	+30%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$22,292	$29,006	$23,354
Federal Gross Debt (billions)	$291.1	$292.2	$283.2
Bond Volume, NYSE (millions)	$31.1	$25.8	$23.6
Stocks Sales, NYSE (thousands of shares)	13,343	11,447	15,041
Loans and Investments (billions)[4]	$106.5	$106.6	$95.9
U. S. Govt. Obligations Held (billions)[4]	$27.5	$27.8	$31.9
PRICES			
STEEL's Finished Steel Price Index[5]	247.82	247.82	247.82
STEEL's Nonferrous Metal Price Index[6]	232.2	232.2	216.9
All Commodities[7]	118.8	118.8	119.3
Commodities Other than Farm & Foods[7]	128.5	128.5	127.2

*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1960, 2,849,474; 1959, 2,831,486. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-39=100. [6]1936-39=100. [7]Bureau of Labor Statistics Index, 1947-49=100.

WHAT'S
DIFFERENT
ABOUT
BRMCO



Pride of workmanship makes BRMCO aluminum, brass or bronze the quality material that can speed your production line, providing fewer rejects, longer tool life and less waste. With BRMCO metals, uniform quality of temper, gauge, width and grain size result in greater efficiency and lower metal working costs.

From the first analysis of raw materials right through casting, rolling, annealing, slitting and finishing operations, BRMCO's skilled craftsmen maintain standards that produce metals meeting the most exacting specifications. Holding a temper tolerance to within plus or minus three points on the Rockwell Scale is only one example of the ability of BRMCO's people.

Quality control at BRMCO assures a steady flow of uniform material to your production line, and BRMCO service supplies that metal on the exact date you specify.

We'll be happy to send you samples for your own testing and analysis. Simply write, or call collect.

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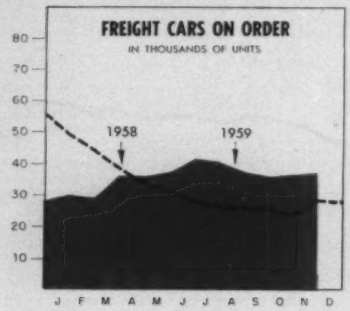
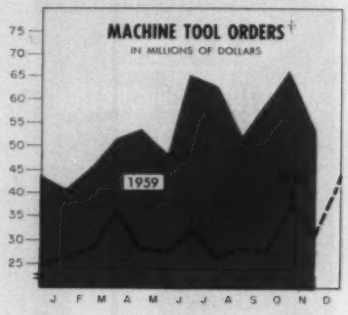
BRIDGEPORT, CONNECTICUT
Subsidiary of Atlantic Coast Industries, Inc.
FINE QUALITY ALUMINUM, BRASS AND BRONZE IN STRIP AND ROLLS

THE BUSINESS TREND





	Awards 1959	Awards 1958	Backlogs (end of month) 1959	Backlogs (end of month) 1958
Jan.	4,007	401	29,470	48,787
Feb.	1,803	287	28,789	43,750
Mar.	10,792	204	35,487	38,027
Apr.	3,736	400	35,479	32,908
May	5,203	1,391	36,869	30,386
June	8,054	320	40,973	27,757
July	4,159	377	40,309	25,994
Aug.	1,753	1,773	37,172	25,611
Sept.	945	1,585	35,626	24,982
Oct.	2,722	666	36,199	23,670
Nov.	2,624	6,295	36,555	27,962
Dec.	....	3,706	.....	27,596
Total	....	17,414		

American Railway Car Institute.
Charts copyright, 1960, STEEL.

	New Orders 1959	New Orders 1958	Shipments 1959	Shipments 1958
Jan.	41,050	26,850	31,300	57,800
Feb.	45,400	28,300	36,050	48,050
Mar.	51,550	36,150	45,750	54,150
Apr.	53,200	28,300	45,000	50,900
May	48,700	28,050	41,000	50,100
June	65,400	32,100	50,050	45,500
July	63,400	26,550	40,600	29,700
Aug.	52,200	28,300	40,300	29,800
Sept.	58,850	28,100	46,150	34,900
Oct.	66,650	37,000	51,500	41,400
Nov.	53,700*	30,700	44,150*	33,650
Dec.	.....	43,900	.....	43,950
Totals	.....	374,300	.....	519,900

†Metal cutting and metal forming.
*Preliminary.
National Machine Tool Builders' Assn.

still set a first half record.

• **Motordom Accelerates**—In an attempt to make up for time lost in the fourth quarter, auto manufacturers are scheduling the highest quarterly output in the industry's history—2,278,500 units may be turned out, says *Ward's Automotive Reports*.

Anxious to get a flying start in 1955, one producer scheduled Saturday work following New Year's day, raising the week's output to 111,574 cars. That figure will expand for the Jan. 9 week to above the 150,000 unit level prevailing before the holidays. Coupled with a rise in truck production—an eight month high of 118,693 units is scheduled for January — this will give production trends a strong nudge toward record highs.

• **Railroads Contribute**—Even the railroads, which are entering a seasonal decline following the end of the Christmas buildup and the extended iron ore shipping season, should be a positive factor in the business rise. Railroads are looking for a 5.9 per cent increase in loadings during the first quarter compared with the corresponding period of a year ago. Ten of the 13 Regional Shippers Advisory Boards anticipate the uptrend.

• **Power Holds Edge** — Output of electric power will continue to hold its edge of 7 or 8 per cent over the year-ago figures, but the week-to-week trend will be down during the first quarter as seasonal factors take hold.

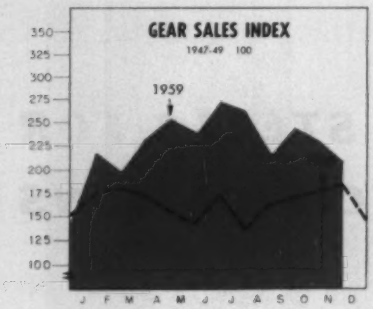
Forecasts Fortified

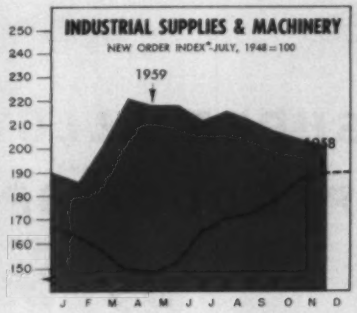
Since most forecasts for 1960 have been based on a peaceful settlement of the steel strike, there is every reason to view the events in that industry during the past week as fortification of those predictions. In case you missed some of them during the holidays, here are a few from the Business & Defense Services Administration.

Metal Cans—Shipments in 1960 are expected to top those of 1959 by 2.5 to 4.5 per cent. Shipments last year shaded the record in 1956 by about 2.5 per cent.

Trucks, Trucktrailers — Output of motor trucks this year will reach 1,125,000 units, 4 per cent more than in 1959. Trucktrailer output will advance 11 per cent to 71,000 units.

Instruments — Sales of scientific





	1959	1958	1957	1956
Jan. ...	218.6	174.5	259.3	245.5
Feb. ...	199.9	179.1	239.5	256.2
Mar. ...	234.3	173.7	262.4	276.5
Apr. ...	255.6	153.2	221.7	264.7
May ...	241.0	142.2	263.2	275.6
June ...	274.2	173.8	215.9	245.4
July ...	262.8	133.3	211.4	286.7
Aug. ...	213.3	162.1	225.8	219.5
Sept. ..	243.9	170.7	174.9	230.5
Oct. ...	230.5	175.9	207.0	299.8
Nov. ...	208.7	182.7	165.3	216.2
Dec. ...	....	145.5	150.8	235.7
Avg ...	....	163.9	216.4	254.4

American Gear Mfrs. Assn.

	1959	1958	1957	1956
Jan.	186	163	221	190
Feb.	202	157	219	190
Mar.	221	149	210	190
Apr.	218	148	203	195
May	218	152	199	199
June	212	164	199	197
July	216	170	197	203
Aug.	212	172	197	211
Sept.	207	178	203	203
Oct.	204	187	192	206
Nov.	202	189	180	220
Dec.	...	190	167	218

*Seasonally adjusted.
Amer. Supply & Machinery Mfrs.' Assn.

and process control instruments this year will total about $4.5 billion, or 15 per cent over the estimated $3.9 billion last year.

Air Conditioning—Production of air conditioning and refrigeration equipment will be about 10 per cent better this year than last.

Boats—More leisure time and higher disposable income will bring about a 5 per cent increase in the sale of boats. About 20 per cent of pleasure craft are made of metal, and the percentage is expected to increase.

Printing Machinery—After showing a 5 per cent gain in 1959 over 1958, production of printing machinery should rack up another 5 per cent gain this year. Value will rise to about $291 million, the 1957 record level.

Toys—Retail sales of toys will show a 5 per cent increase over the 1959 figure of $1.65 billion.

Antifriction Bearings—A record-breaking year is in sight for this industry. Shipments will better the 1959 estimated total of $800 million by 15 to 20 per cent.

Integral Horsepower Motors—Shipments should rise to $534 million this year, about 10 per cent over the 1959 figure.

Electrical Equipment — A sales gain of 8 per cent in 1959 will be followed by another gain of 5 per cent in 1960.

Electrical Transmission, Distribution Equipment—Shipments will show a gain of 3 per cent this year, reaching $965 million.

Farm Machinery—Despite declining farm income, sales should increase 5 per cent in 1960 because of increasing replacement demand and the trend toward larger units.

Pumps, Fans, Blowers — Shipments of industrial pumps, compressors, fans, and blowers this year will increase to $1.213 billion from last year's estimated $1.086 billion.

Forgings—Barring a damaging rail strike, the shipments of steel forgings in 1960 should improve moderately over the 1959 level.

Freight Cars—Production of 55,000 freight cars will make this the best year since 1957.

Aluminum—Shipments of aluminum in 1960 will rise 10 to 15 per cent above the 1959 level.

Titanium—Because of cancellations in the aircraft program, shipments of titanium products in 1960 will decline to 5.2 million pounds from 1959's 6 million pounds.

Copper, Brass—Mill and foundry product shipments will rise 5 per cent this year.

How to maintain working-level inventories

Storing extra stocks of fasteners is expensive and space consuming. Screw and Bolt Corporation makes it possible for you to end inefficient, costly overbuying and maintain properly balanced inventories. Nationally situated plants, distributors and warehouses stand ready to supply you from existing stocks, when you need them. If it's specials you want, our experienced designers can quickly come up with the answer. Remember, only one order from this one source can fill your every fastener requirement.

V34A 6779

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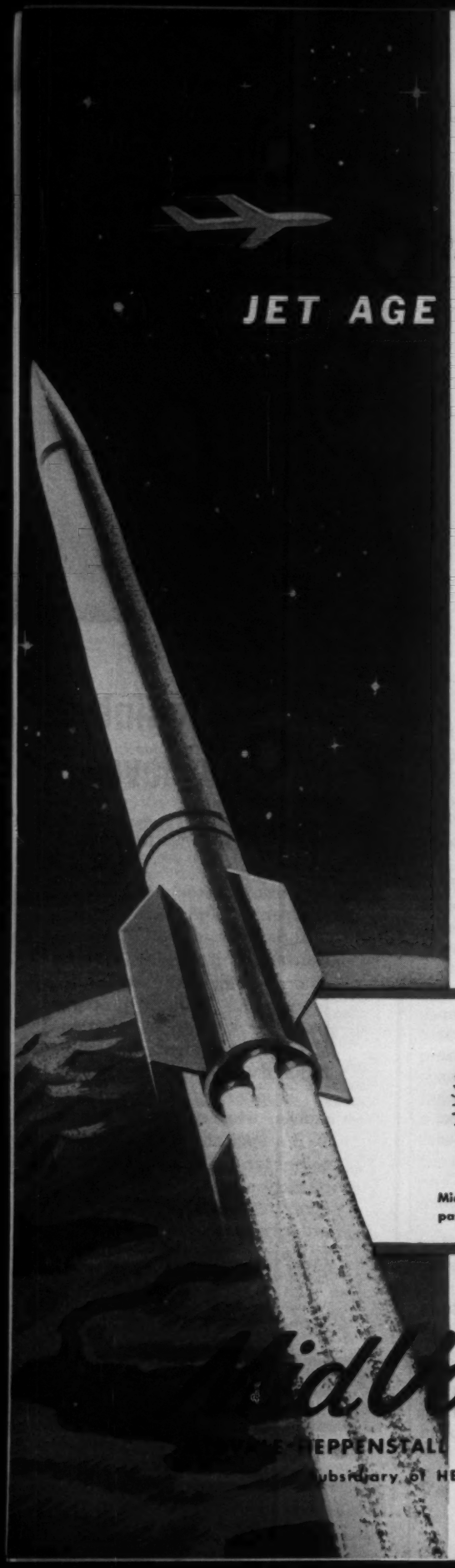

SUPER ALLOY STEELS FOR JET AGE PRODUCT SPECIFICATIONS

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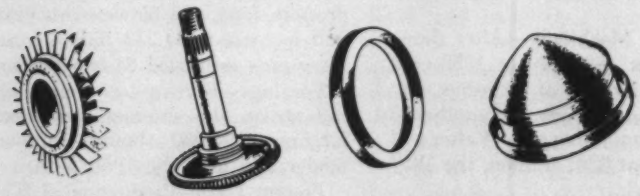
When parts for missiles . . . super aircraft . . . and other jet age products call for super alloys to operate at high temperatures specify MID-VAC Steels.

MID-VAC Steels — produced by the MIDVAC Process of consumable electrode vacuum melting — have increased tensile and impact . . . improved stress rupture strength at elevated temperatures . . . long fatigue life. They meet specifications of critical parts where strength is needed at temperatures above 1000°F. Super alloys for missile combustion chambers, tail cone assemblies, nose cone or structural members, aircraft landing gear parts and compressor rotor blades.

Offered in ingots, billets or forgings. Write for technical data on these new super alloy steels.



Midvac Super Alloys for missile combustion chambers, tail cone assemblies, jet engine parts and other parts requiring properties beyond the capabilities of conventional steels.

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ROBERT D. AHLES
GE-Schenectady Foundries post

P. O. PETERSON
Hercules Motors president

WESLEY A. SONGER
Crane Co. president

EARL C. SILVER
Reynolds Metals pur.-dir.

Robert D. Ahles was made manager - manufacturing, Schenectady, N. Y., foundries, **General Electric Co.** He succeeds **John E. Waugh,** who retires Apr. 1, serving in the meantime as manufacturing consultant-Foundry Dept. Mr. Ahles was manager-product engineering for the department.

P. O. Peterson was elected president and chief executive officer of **Hercules Motors Corp.,** Canton, Ohio. He succeeds **William L. Pringle,** resigned. He was president of Mack Trucks Inc. from 1955 to 1958, and formerly served as an executive of Studebaker Corp. (now Studebaker-Packard Corp.).

Wallace B. Quail, vice president-sales, Armco Div., **Armco Steel Corp.,** Middletown, Ohio, was elected vice president-distribution for the corporation. He is succeeded at the Armco Div. by **Murray B. Wilson,** former manager-central sales area of the division.

Wesley A. Songer was elected president and chief administrative officer of **Crane Co.,** Chicago. Elected executive vice president last June, he replaces **L. H. T. Clegg** who has been acting president since April. Mr. Clegg continues as president of Crane Ltd., Montreal, Que.

Russell O. Newton joined **Erie Foundry Co.,** Erie, Pa., as sales manager. He was New England district sales manager, industrial products, Brown & Sharpe Mfg. Co.

Robert D. Crane was made director of purchases and traffic, **Dresser Industries Inc.,** Dallas. He was assistant director-purchases. He succeeds **Robert C. Kelley,** retired.

Bill K. Bugg was promoted to superintendent-plate and hot strip mills at the Gadsden, Ala., plant of **Republic Steel Corp.** Former assistant superintendent, Plate-Hot Strip Dept., he succeeds the late **E. H. Callahan.**

Earl C. Silver was promoted to director of purchases at **Reynolds Metals Co.,** Richmond, Va. He succeeds **Matthew W. Henry,** vice president-director of purchases, who retired. Mr. Silver was assistant general purchasing agent. **Joel Denton** was promoted to power manager to succeed the late **Edwin J. Appel.**

Kenneth W. Sward was appointed executive assistant to the executive vice president and general manager, **Weaver Mfg. Co.,** Springfield, Ill. He was vice president and director of engineering of Dura Corp., Detroit, parent company.

John J. Rich was appointed purchasing agent for the Dearborn, Mich., plant of **American-Standard Industrial Div.,** American Radiator & Standard Sanitary Corp. He was materials manager at Thompson Ramo Wooldridge Inc., Cleveland.

Robert W. Richardson was made sales manager; **David H. Hunt**

WALLACE B. QUAIL
Armco v. p.-distribution

ROBERT D. CRANE
Dresser purchasing dir.

BILL K. BUGG
Republic-Gadsden supt.

JOHN J. RICH
American-Standard p. a.

C. R. DeVLIEG RICHARD A. JERUE ALLEN N. SWEENEY

executive posts at DeVlieg Machine Co.

chief engineer of **Spencer Turbine Co.**, Hartford, Conn.

C. R. DeVlieg, former executive vice president, was elected president of **DeVlieg Machine Co.**, Royal Oak, Mich. He succeeds **C. B. DeVlieg**, now chairman. **Richard A. Jerue**, chief engineer, was promoted to vice president-engineering. **Allen N. Sweeney**, chief engineer, Microbore Div., was named director of engineering and research for the company.

Peter H. Ponta was made director of manufacturing engineering for **Ford Motor Co.**, Dearborn, Mich. He was general manufacturing manager, Engine & Foundry Div., and is succeeded by **Robert Stevenson**, former chief engineer of the division's product engineering office. Mr. Ponta succeeds **J. F. Randall** who was named manager of Ford Div.'s expanded manufacturing engineering operations. **William D. Innes** succeeds Mr. Stevenson.

James J. Sherry Jr. succeeds **Robert M. Wagner** as general production manager of **Buick Motor Div.**, Flint, Mich., General Motors Corp. Mr. Sherry was assistant to Mr. Wagner.

John L. Bennett was made product development manager, **Black & Decker Mfg. Co.**, Towson, Md. **Robert H. Riley Jr.** was made technical services manager, Engineering Dept. **William S. Brucker** was appointed engineering manager of the subsidiary, Master Power Corp., Bedford, Ohio.

Vernon L. Haag was made director of manufacturing, **Electro Tec Corp.**, South Hackensack, N. J. He was vice president-general manager of Farnsworth Electronics Co.

R. T. Morrow was elected chairman, **Lakeside Steel Improvement Co.**, Cleveland, and continues in charge of sales. **John Ries** was elected president and treasurer and will serve as chief executive officer and general manager. **C. Robert Derhammer** was elected secretary with the added duties of purchasing agent.

William W. Sorn was appointed manager of manufacturing at **Lipe-Rollway Corp.**, Syracuse, N. Y.

Anaconda Wire & Cable Co., New York, appointed **David E. Allen** executive vice president to succeed **Richard B. Steinmetz**, who was elected president last October. Mr. Allen was vice president-sales. **William H. Benton Jr.**, former general manager-mills, was elected vice president-manufacturing to succeed **Vito F. Di Lustro**, retired. **John L. Tindale**, former commercial vice president, was advanced to vice president-marketing and sales. **Henry V. Van Valkenburg**, general sales manager, was promoted to vice president-general sales manager.

E. H. Sangwine was named to the new post of manager of process and engineering development for the Metals Div. of **Kaiser Aluminum & Chemical Corp.**, Oakland, Calif. He was works manager of the company's alumina plant at Gramercy, La. **A. F. Garcia**, works manager of the Mead, Wash., reduction plant, was appointed manager of reduction operations, with headquarters at Oakland. **J. D. Buhler** was named Mead plant manager; **Winston Cundiff**, Gramercy plant manager.

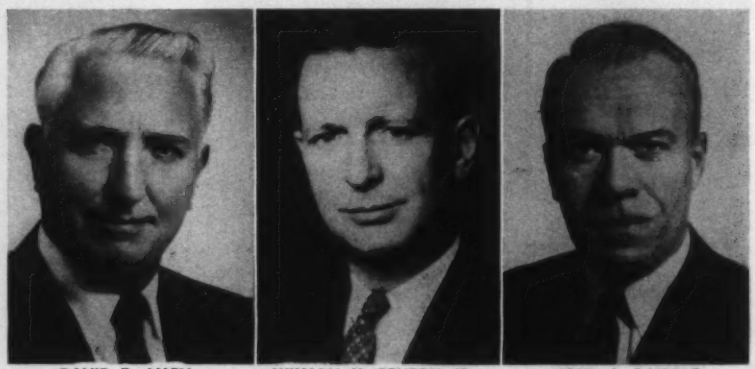
John Fasano and **David B. Morgan Jr.** were appointed vice presidents of **Heli-Coil Corp.**, Danbury, Conn. Mr. Fasano has been sales manager since 1956. Mr. Morgan is director of industrial and public relations.

Ellis B. Gardner was appointed executive vice president of **Hewitt-Robins Inc.**, Stamford, Conn. He headed the Foam Products Div.

Robert D. Conroy was elected vice president of **Empire Steel Corp.** He formerly managed the Denver district sales office of Gate City Steel Co.

R. G. Birkin was appointed sales manager, Heavy Machinery Div., **Cleveland Crane & Engineering Co.**, Wickliffe, Ohio. He was eastern district sales manager of the division. He replaces **C. H. Saiter**, retired, but continuing as a consultant for special projects.

H. William Thomas joined **Astronautics Div.**, Chance Vought Air-



DAVID E. ALLEN WILLIAM H. BENTON JR. JOHN L. TINDALE

Anaconda Wire & Cable executive changes

MORE MILLIONS OF OPERATIONS

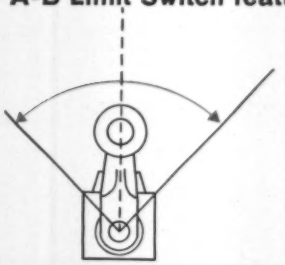
with Allen-Bradley Limit Switches

There's nothing now on the market to match the reliability and trouble free performance of Allen-Bradley Bulletin 802T limit switches. They are completely oiltight—operating heads and switch bodies are sealed against oils, coolants, and metal chips. Operators cannot become sluggish or "stick" in operation—contacts cannot become fouled. The double break, silver contacts are always in perfect operating condition—and remain so without maintenance.

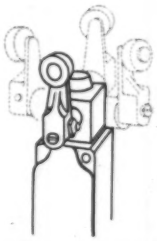
Insist on Allen-Bradley—the *quality* line of limit switches that will give you *many more millions* of trouble free operations.

Bulletin 802T Micrometer Adjustment Roller Lever Limit Switch ▲

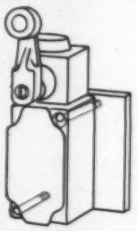
A-B Limit Switch features mean more life, more dependable trouble free service

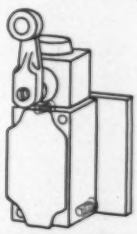


REPETITIVE ACCURACY—Unique toggle blade action assures operation at precisely the same point each time, without adjustment.



FLEXIBILITY—All operating heads can be rotated and fastened in any of four positions 90° apart.





FRONT MOUNTING **REAR MOUNTING**

All Allen-Bradley Limit Switches can be mounted either from the front . . . or from the rear.

SEE OTHER SIDE FOR TYPICAL APPLICATIONS ⟶

1-60-MR

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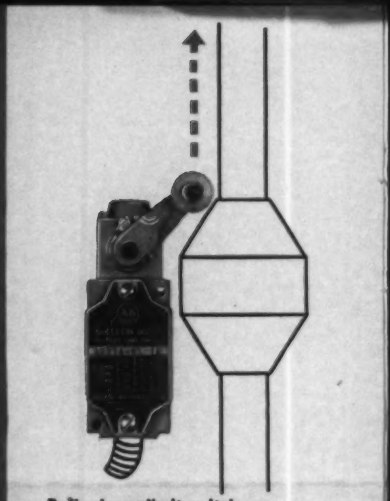
Allen-Bradley Co., 1316 S. Second St., Milwaukee 4, Wis. • In Canada: Allen-Bradley Canada Ltd., Galt, Ont.

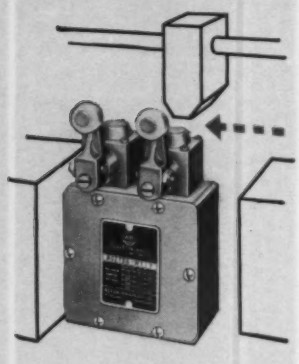
QUALITY MOTOR CONTROL

Allen-Bradley has an Oiltight Limit Switch to meet your exact needs!

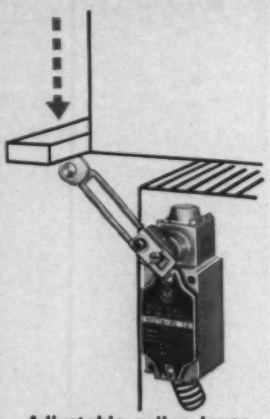
From among the wide variety of Allen-Bradley oiltight limit switches, you are certain to find the exact type to satisfy your specific requirements. If you do not, then please discuss *your* problem with us. A-B limit switches are available with many different levers, lever-contact actions, operating forces, and actuator motions—in spring return or maintained contact construction. A new 16-page illustrated booklet on this *quality* line of A-B oiltight limit switches is just off the press. Write for it!



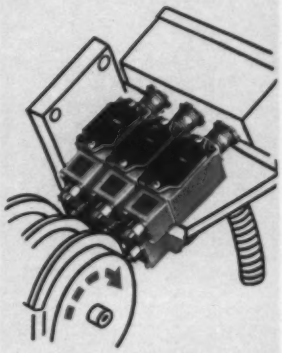
Roller lever limit switch—Here it is operated by dog on vertically moving shaft.



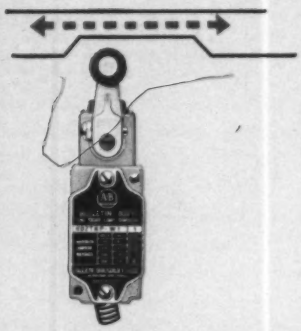
Duplex limit switch where block can also trip second switch for safety insurance.



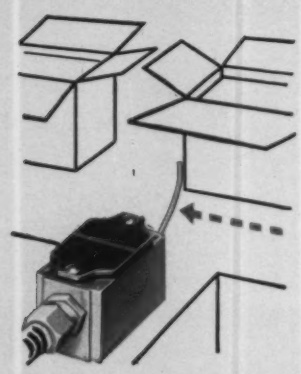
Adjustable roller lever switch. Lever set for operation at greater than normal distance.



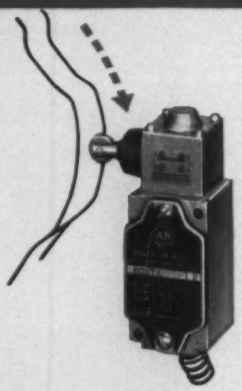
Top push roller limit switches are frequently operated by rotating cams on machine tools.



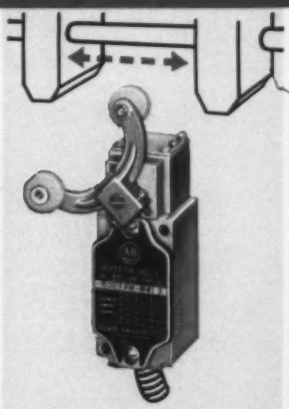
Neutral position switch—moving bar closes separate contacts as it moves each way.



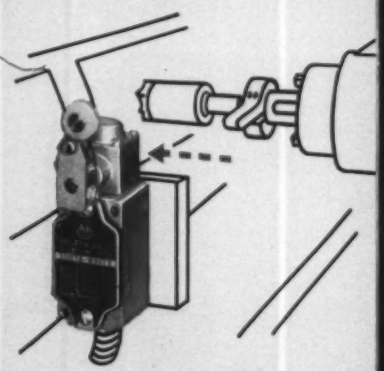
Cat's whisker limit switch is actuated by movement of lightweight units on conveyor.



Side roller limit switch, as illustrated here, is being actuated by a rotating cam.



Fork lever maintained contact switch—adjustable dogs trip one roller in each direction.



Micrometer adjustment switch for precise setting of trip point in machine tool operations.

1-60-MR

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QUALITY MOTOR CONTROL

FRANK KIRSTEN
National Broach factory mgr.

WILLIAM F. MARTIN
Borg-Warner mfg.-services dir.

GEORGE P. BURNS
Van Norman Machine v. p.

WAYNE E. AULT
Automatic Sprinkler eng.-mgr.

E. M. deWINDT
Eaton Mfg. v. p.-sales

JOHN H. GREENING
Micromatic Hone dir.-eng.

craft Inc., Dallas, as market development manager.

Wayne E. Ault was promoted to manager of engineering, **Automatic Sprinkler Corp. of America,** Youngstown. He was manager, Technical Div.

Robert L. Edwards was promoted to general sales manager, **Master Pneumatic Inc.,** Detroit. He was regional sales manager.

Arch Warden succeeds **F. Birney Farrington,** retired, as president of **Xcelite Inc.,** Orchard Park, N. Y.

Leonard G. Taggart fills the new post of materials manager, Special Products Div., **Stromberg-Carlson,** Rochester, N. Y., a division of General Dynamics Corp. He is responsible for purchasing and production control.

Ivan C. Sengenberger was made assistant to the manager of operations, Chicago district, **American Steel & Wire Div.,** U. S. Steel Corp.

E. M. deWindt was elected vice president-director of sales, **Eaton Mfg. Co.,** Cleveland. He succeeds **Ralph E. Fisher,** retired. Mr. DeWindt was assistant director of sales.

John H. Greening was appointed director of engineering, **Micromatic Hone Corp.,** Detroit. He was a staff assistant to the executive vice president and later chief engineer.

Frank S. Greenwald, plant manager, **Stearns Magnetic Products,** Milwaukee, was named general manager of the firm, division of Indiana General Corp.

John F. English was named district sales manager (Ohio and Michigan) of **Worm Gear Jack Div.,** Duff-Norton Co.

Peter Arnold, former development engineer for automatic equipment with Hanson-Van Winkle-Munning Co., was appointed eastern sales manager for equipment of **Meaker Co.,** subsidiary of Sel-Rex Corp. He has headquarters at Nutley, N. J.

Frank Kirsten was made factory manager; **Carl Motz** chief engineer of **National Broach & Machine Co.,** Detroit. Mr. Kirsten was general superintendent; Mr. Motz assistant chief engineer.

William F. Martin was made director of manufacturing services, **Borg-Warner Corp.,** Chicago. He was vice president-manufacturing for the Byron Jackson Div.

George P. Burns was elected vice president and sales manager-machine tools for **Van Norman Machine Co.,** Springfield, Mass. He was sales manager-machine tools.

John J. McDonald and **Linden G. Criddle** were elected vice presidents of **Consolidated Systems Corp.,** Monrovia, Calif., subsidiary of Consolidated Electrodynamics Corp. Mr. McDonald continues as director of engineering; Mr. Criddle as director of operations.

Albert J. Reichers was made general plant manager, **Cooper Alloy Corp.,** Hillside, N. J., responsible for manufacturing in the foundry, Stainless Engineering and Vanton Pump & Equipment Divisions.

OBITUARIES...

Leland M. Hogan, 60, vice president-sales, **Standard Tube Co.,** Detroit, died Dec. 25.

J. Fletcher Harper, 65, retired vice president-engineering, **Globe-Union Inc.,** Milwaukee, died Dec. 25.

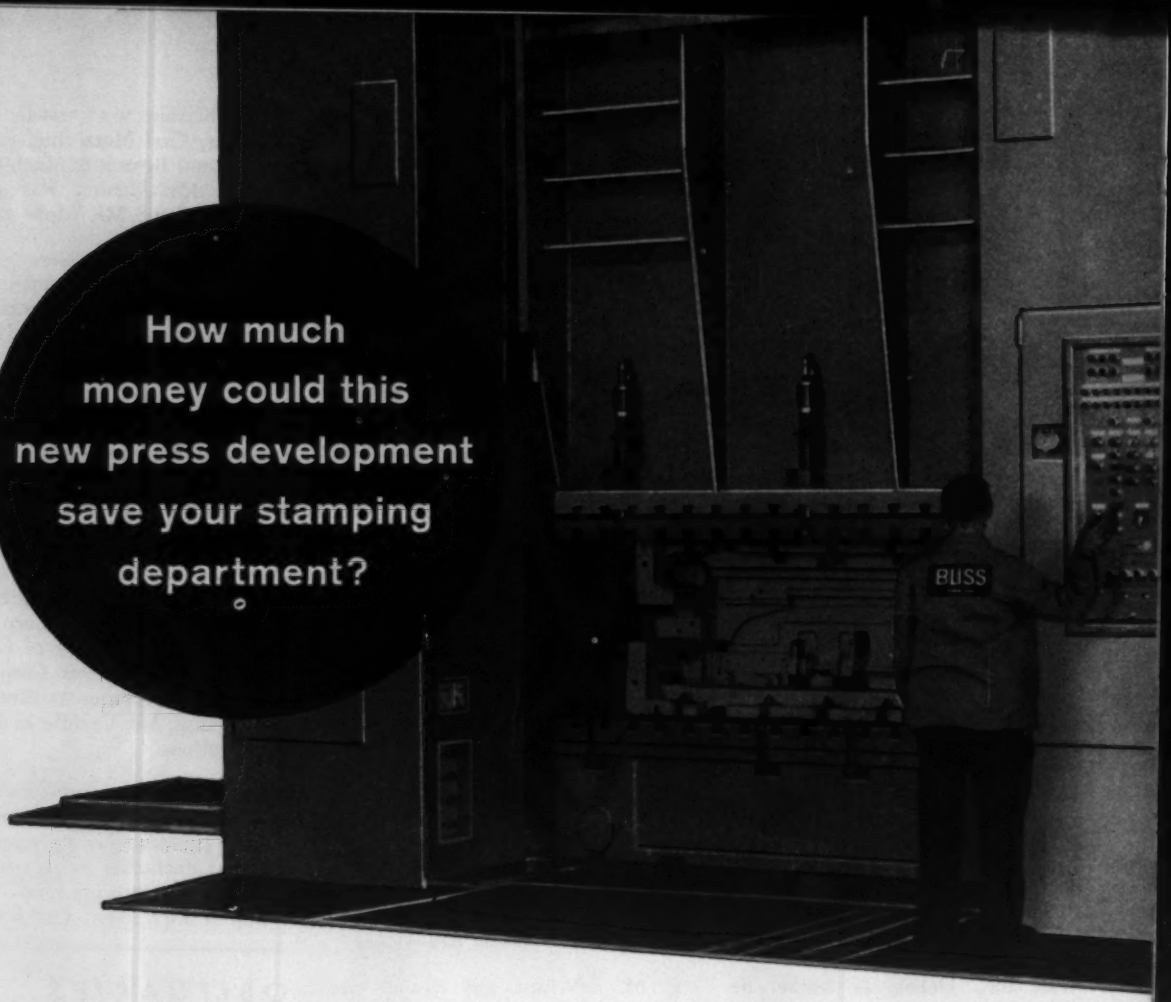
Alex P. Fox, past president, **Lincoln Engineering Co.,** St. Louis, and vice president of **McNeil Machine & Engineering Co.,** died Dec. 11.

Ralph C. Feigles, 50, works manager, **Sprout, Waldron & Co. Inc.,** Muncy, Pa., died Dec. 13.

C. Clarke Wales, 59, chief project engineer for **National Tube Div.,** Lorain, Ohio, U. S. Steel Corp., died Dec. 23.

Nathan N. Kaplan, 58, general manager, **Detroit Gauge & Tool Co.,** Detroit, died recently.

W. A. Besserdich, 92, a founder of **Four Wheel Drive Auto Co.** (now FWD Corp.), Clintonville, Wis., died Dec. 22.



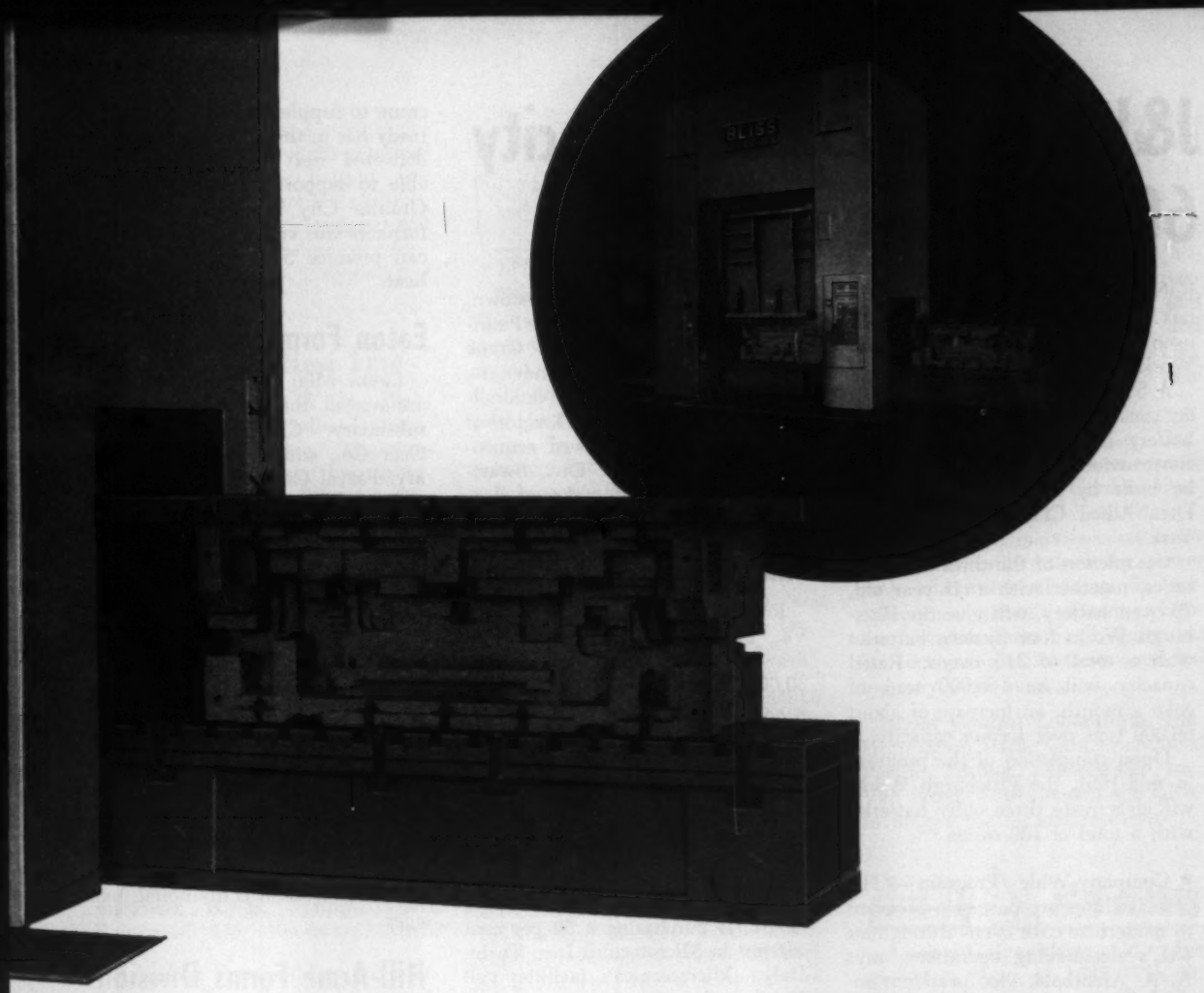
BLISS ROLLING BOLSTER PRESS CUTS DIE CHANGES TO MINUTES!

Get the most from each man hour... electrical and pneumatic controls adapt the rolling bolster to either long- or short-run operations.

BLISS
SINCE 1857 ®

BLISS is more than a name... it's a guarantee

E. W. BLISS COMPANY, Canton, Ohio



Hailed as the longest step forward in large press design in the last twenty years, the new Bliss rolling bolster press outproduces an equivalent straight side press by a ratio of 1¾-to-1. It raises press efficiency—the percent of the time the press is actually producing stampings—from an average of 40% to better than 90% of every working hour. More than twenty are already on order!

The new Bliss rolling bolster presses are far more than straight sides with something added. They have been redesigned throughout for high-speed operation. Some of their special features:

Automatic die clamps...driven by a push-button controlled torque motor. Six threaded T-bolts clamp or unclamp the dies in seconds. Electric interlocks protect the dies and press from damage.

Automatic ram positioner...positions ram electronically to any desired shutheight within .0015". It's fast and simple...you set the dials and push the button.

Hydraulic overload protection...guards against die damage. Press overload releases oil in unique system under pressure equal to a preset capacity. Press stops, warning lights flash.

Simplified gear train...has only four gears, fewer than any other underdrive press. This extremely low inertial load permits a very high tripping rate with minimum clutch wear.

Demountable gear case...comes off as a single unit, exposing all drive gears, clutch, brake and flywheel. Cuts hours from maintenance.

Link type press drive...develops extremely high mechanical advantage through links, rock shafts and pulldown rods. Rock shafts rock to within 5° of vertical alignment, eliminating press sticking at bottom dead center.

These overall design advantages and special features may save you money on many of the parts you are now producing on conventional presses. In total, they make up the most advanced and productive straight side presses ever developed... just one more result of Bliss' constant effort to design equipment to cut production costs to the bone. For detailed information, write us today.

PRESSES · ROLLING MILLS · ROLLS · DIE SETS · CONTAINER MACHINERY · CONTRACT MFG.

J&L to Raise Coke Capacity 60,000 Tons a Month

JONES & LAUGHLIN Steel Corp. has awarded contracts for a 118 oven coke battery at its Pittsburgh Works. Cost: $9.5 million.

A 59 oven battery already is under construction and another 59 oven battery is planned for early 1960 construction, says J&L. They'll all be built by Wilputte Coke Oven Div., Allied Chemical Corp., New York.

Completion of the three new batteries, together with a six year old, 79 oven battery, will give the Pittsburgh Works four modern batteries with a total of 315 ovens. Rated capacity will be 160,000 tons of coke a month, an increase of about 60,000 tons over former capacity.

Upon completion of the program in mid-1961, the Pittsburgh Works will deactivate three older batteries with a total of 180 ovens.

• **Company-Wide Program** — The new facilities are part of a program to modernize coke ovens throughout J&L's steelmaking operations, says A. A. Archibald, vice president-engineering and plant.

The increased capacity of facilities at the Pittsburgh Works will provide ample coke for the six blast furnaces at the works. Excess coke will be shipped to J&L's Cleveland Works which has no byproduct coke facilities.

All three new batteries will feature the Wilputte four divided, low differential ovens and rotating table charging cars, which permit rapid charging without smoke emersion.

Coal for the ovens will be charged mechanically rather than by gravity to provide more uniform distribution in the ovens. Additional coal bin capacity, flushing liquor facilities for gas scrubbing, and coke wharf facilities also will be installed.

Contracts will be awarded later for primary coolers, a sulfate dryer, and a tar extractor and reheater.

Crane Broadens Activities

Crane Co., Chicago, will acquire the operating assets of National-U. S. Radiator Corp., Johnstown, Pa., subject to approval of the Pennsylvania firm's stockholders. Crane will operate the business under the direction of T. B. Focke, National-U. S. Radiator president. Directors of Crane have also approved acquisition of the Autronic Div., Swartwout Co., Cleveland, maker of electronic controls.

Enlarges Tubing Facilities

Reynolds Metals Co., Richmond, Va., has completed installation of drawn tubing facilities in a new 30,000 sq ft addition to its Bellwood extrusion plant at Richmond. Cost: More than $500,000. The equipment was manufactured by Vaughn Machinery Co., Akron.

Acquires Foreign Outlet

Hamilton Standard Div., United Aircraft Corp., Windsor Locks, Conn., is purchasing a 50 per cent interest in Microtecnica Inc., Turin, Italy. Microtecnica's facilities will be adapted to the production, under license, of many Hamilton Standard products for the European Common Market. The Italian firm's main products are marine and aviation navigation instruments, optical and mechanical testing instruments, servomechanisms, and synchromechanisms.

Granite City Expanding

Granite City Steel Co., Granite City, Ill., is building a 175 ft extension to the pit or "tapping" side of its open hearth building. It's part of an expansion program started early in 1959. Completion is scheduled for 1961. It will increase the steelmaking capacity of the company's seven open hearth furnaces to 1,740,000 tons a year, an increase of 300,000 tons.

The extension will provide a longer pouring table for handling the teeming of molten steel from large, brick lined ladles into rows of ingot molds. The company has also ordered another powerful ladle crane to supplement the three it already has in the pit area. It will be delivered next June and will be able to support 350 tons. One of Granite City Steel's open hearth furnaces was enlarged recently so it can produce 500 tons of steel per heat.

Eaton Forms Divisions

Eaton Mfg. Co., Cleveland, has announced that its wholly owned subsidiary, Cleveland Worm & Gear Co., and the latter's subsidiary, Farval Corp., have become divisions of Eaton. George H. Acker has been appointed general manager of the two divisions with full administrative responsibilities. Cleveland Worm & Gear Div. makes worm gears and worm gear speed reducers; Farval Div., centralized lubricating systems.

Enlarges Motor Plant

Electric Motor Div., A. O. Smith Corp., is adding 42,000 sq ft of floor space to its plant at Tipp City, Ohio. Cost (including new tools and equipment): $1.4 million. W. H. Dickenson is divisional manager.

Hill-Acme Forms Division

Hill-Acme Co., Cleveland, has formed a Material Handling Div. to produce C hooks, vertical coil tongs, sheet and plate lifters, and similar equipment. Homer McDaniel is sales manager of the division. Other divisions of the company manufacture heavy duty grinders, forging machines, shears, and special machine tools.

Moves to West Coast

Greer Hydraulics Inc. is moving its research, development, and production facilities in the fields of missiles, ground support equipment, and hydraulic systems to 5930 W. Jefferson Blvd., Los Angeles, Calif., early in 1960.

Reynolds Forms Division

Packaging research at Reynolds Metals Co. will be centralized in a new Packaging Research Div. with A. Irving Totten Jr. as general director. The division reports direct-

ly to W. G. Reynolds, executive vice president. Managers of the principal departments of the division are: W. P. Andrews, material research; J. M. Fultz, sales development; and W. E. Cheeley, product development. G. A. Rutledge is manager of product engineering.

Foundry Adds New Line

Swayne, Robinson & Co., Richmond, Ind., has introduced aluminum casting to its line. The company has molded gray iron exclusively for 127 years. The new line accounts for 10 per cent of the firm's total output and will increase to about 30 per cent, says C. K. Robinson, vice president.

ASSOCIATIONS

Material Handling Institute Inc., Pittsburgh, elected these officers: President, C. L. Fell, American Monorail Co., Cleveland; first vice president, R. F. Moody, Hyster Co., Portland, Oreg.; and second vice president, B. E. Phillips, Clark Equipment Co., Buchanan, Mich.

American Powder Metallurgy Institute has been formed as a technology division of the Metal Powder Industries Federation, New York. Robert C. Burgess is president and Kempton H. Roll is executive secretary of the institute. Membership is open to anyone having a bona fide interest in powder metallurgy.

Copper Products Development Association Inc. has been formed in New York to conduct research and studies "for expansion of uses of copper and copper products, and the development of new and improved copper products." Charter members are American Metal Climax Inc., American Smelting & Refining Co., Anaconda Co., International Nickel Co. of Canada Ltd., Kennecott Copper Corp., and Phelps Dodge Corp. Dr. Clyde Williams is technical director pro tem.

E. D. Hoekstra has been appointed executive secretary of the **National Constructors Association**, New York.

CONSOLIDATIONS

Bliss & Laughlin Inc., Harvey, Ill., will purchase **Sierra Drawn Steel Co.**, Los Angeles, subject to approval of Sierra stockholders. Both companies are producers of cold finished steel bars. If the merger is approved, Fred Robbins, president of Sierra Drawn Steel, will become vice president in charge of the Sierra Drawn Div., consisting of mills at Los Angeles and Seattle.

Bostrom Corp., Milwaukee, acquired **Hickman Industries Inc.**, Eden, N. Y., specialists in development of torsion suspension for vehicle chassis and seat components. New officers of Hickman Industries Inc. are: President, Harold Bostrom; vice president, A. K. Simons; and secretary-treasurer, R. V. Whiting.

Wheelabrator Corp., Mishawaka, Ind., acquired about 80 per cent of the controlling stock of **Lord Chemical Corp.**, York, Pa. Lord Chemical will continue to operate in York as a majority owned subsidiary of Wheelabrator, manufacturing its line of vibratory and barrel type finishing equipment. Wheelabrator manufactures blast cleaning equipment, steel abrasives, and dust and fume control equipment. Officers of Lord Chemical are: Chairman, J. F. Connaughton; president, H. R. Stitely; vice president - treasurer, J. A. Schmidt; secretary, H. E. Smith; and controller, J. M. Wolf.

Heresite & Chemical Co., Manitowoc, Wis., purchased **General Coating Co.**, Woodbridge, N. J. Management of the Woodbridge plant consists of Fred Sharpe, general manager; Max Ackermann, plant manager and chief engineer.

Hupp Corp., Cleveland, acquired the assets of **John J. Fannon Products Co.** and **John J. Fannon & Co.**, Detroit, pioneers in industrial process heating equipment and developers of paint baking ovens. Officers of the new Hupp subsidiary are: President, J. J. Fannon Jr.; and vice president, R. J. Fannon. With present production facilities in Detroit operating at capacity, some manufacturing operations will be performed in the Cleveland Perfection plant.

Heli-Coil Corp., Danbury, Conn., acquired **Grip Nut Co.**, South Whitley, Ind. Heli-Coil makes screw-thread and screw-lock inserts and a line of related taps, tools, and gages. Grip Nut produces specialty fasteners, including lock nuts, weld nuts, and clinch nuts.

Apex Machine & Tool Co., Dayton, Ohio, will become a wholly owned subsidiary of **Gardner-Denver Co.**, Quincy, Ill., on Mar. 1. The Apex firm manufactures screw driver bits and sockets for power tools and universal joints for machinery and aircraft. Gardner-Denver is a manufacturer of equipment for construction, petroleum, general industry, and mining.

Metal Control Laboratories Inc., Huntington Park, Calif., purchased **Pacific Testing Laboratories Inc.**, Van Nuys, Calif., which specializes in fatigue testing and research.

NEW PLANTS

Acme Galvanizing Co. Inc. opened a plant at 1655 17th St., Oakland, Calif. A new 32 ft furnace has a capacity of 9000 lb per hour.

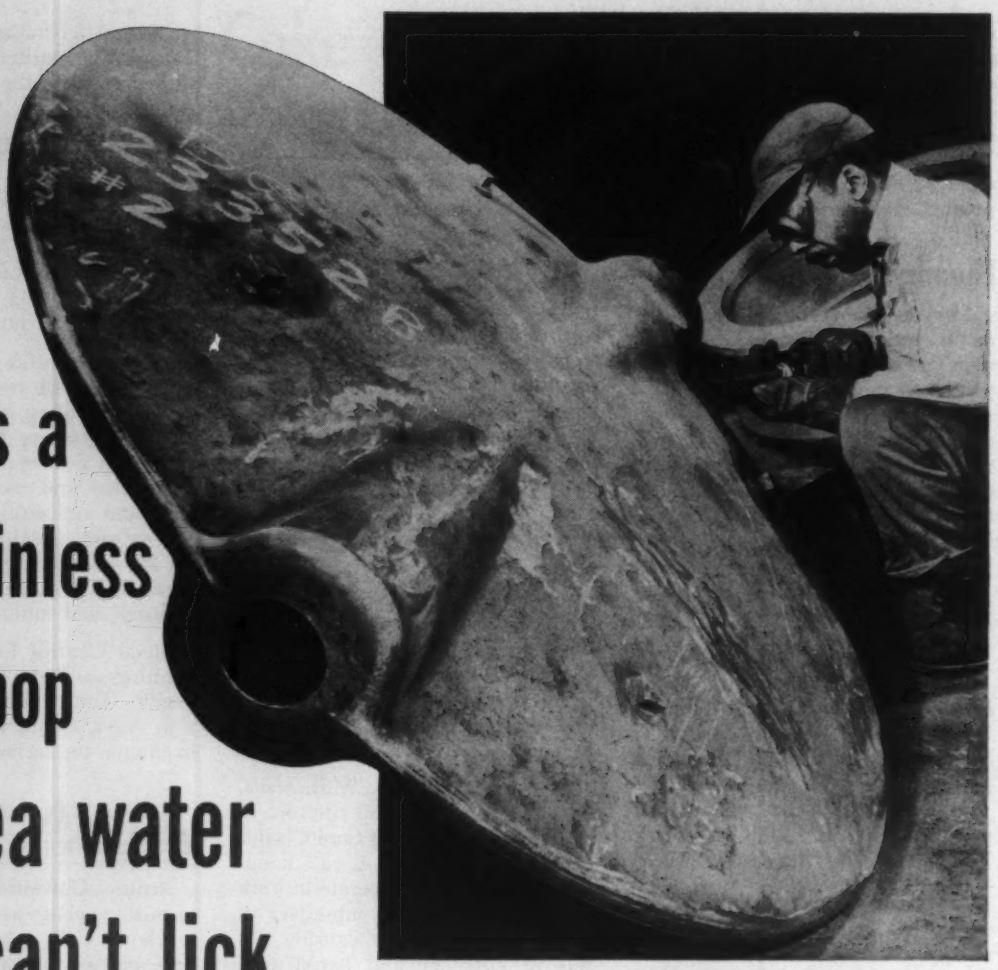
Lewin-Mathes Co., St. Louis, will operate a 15,000 sq ft service center at 42-15 Crescent St., Queens, N. Y. Completion is slated this month. The company is a division of Cerro de Pasco Corp., producer of nonferrous metals and semifabricated products. The Queens mill depot will serve as a distribution center for copper and brass tube and pipe.

NEW ADDRESSES

Luria Bros. & Co. Inc. moved to its new headquarters building at 130 Presidential Blvd. N., Bala-Cynwyd, Pa.

Yale Materials Handling Div., Yale & Towne Mfg. Co., Philadelphia, moved its Chicago district sales and service branch to 9335 Belmont Ave., Franklin Park, Ill.

Here's a stainless lollipop sea water can't lick



This large (48″ dia., 1701 lbs.) and unusual stainless casting was fabricated by Allegheny Ludlum's Buffalo, N.Y. foundry. It is scheduled for service under the most severe operating conditions, functioning as a wafer valve disc at 25 psi pressure in sea water. Since long life and tight closing are essential in this application, corrosion resistant Type 304 Allegheny Stainless was specified.

Some unusual techniques were employed in the fabrication of this casting. Although the entire valve disc was cast as a single piece, its sides are hollow, with a skin only ¾″ thick. The center shaft was cast solid at the same time the side wings were cored, permitting the single piece, seamless part desired.

If you have a casting problem, or *any* problem that involves corrosion resistance, long life, resistance to wear and abrasion, call the Allegheny Ludlum Sales Office nearest you. An A-L Sales Engineer is ready to put his skills and those of the A-L Technical Staff promptly at your disposal, to serve your requirements from the largest and most complete line of stainless products on the market.

Allegheny Ludlum Steel Corporation, Oliver Building, Pittsburgh 22, Pennsylvania.

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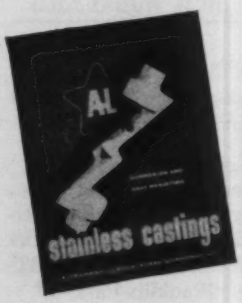

Write for this 28-page booklet on A-L STAINLESS CASTINGS

28 pages of valuable and complete data on stainless castings: analyses, properties, technical data on handling and heat treatment, typical applications, how to order, etc.

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Make it BETTER and LONGER LASTING with

ALLEGHENY STAINLESS

AL

MACHINE TOOL STANDARDS— Member nations of the International Organization for Standardization are taking a look-see at several standards for machine tools. Two cover lathe tool posts, speeds, and feeds; four deal with a 5 per cent taper for tool shanks, lathe centers, 7/24 tapers and control symbols on machines; another would substitute certain symbols for word descriptions. Next meeting: In September, at The Machine Tool Exposition—1960.

TIN PLATE EASES TV MAKING—Heavy gage, electrolytic tin coated steel works better than cold rolled or terne plate in electronic chassis, claims Blonder-Tongue Laboratories, Newark, N. J. Advantages: It doesn't require plating; it's easily soldered; it comes in more sizes; and finished products are good looking.

SANFORIZED ALUMINUM— Several alloys with substantially reduced shrinkage tendencies have been developed, says American Smelting & Refining Co., New York. Called Pressure Tight (PT) grade, they are interchangeable with standard sand and permanent mold casting aluminum.

MISSILE BATTERY— Missile people have a silver-zinc battery which will last 100 days in flight components. It weighs less than 1 lb, measures 2 by 5 by 3½ in. NASA will use the device in its research programs.

DIGITAL CONTROLLED LATHE— Programing and positioning of all basic functions on a Fastermatic turret lathe will be done by a Westinghouse Prodac system, states Gisholt Machine Co., Madison, Wis. On repetitive operations, it allows an operator to use his time more efficiently.

BRAZED COUPLING WINS OUT— A simple brazed sleeve joins the ends of many steel tubes on the B-70 at North American Aviation Inc., Los Angeles. Induction heating completes the job in less than 10 seconds without disturbing the heat treated properties of the metal. As replacements for conventional fittings, the switch will save 1008 lb per plane. The method was also used for the X-15 research planes.

METAL HYDRAULIC FLUID— A liquid alloy of sodium and potassium might be the answer to a suitable hydraulic fluid that will operate at temperatures of 1000° F, thinks General Electric Co., Schenectady, N. Y. Its observations on the behavior of such an alloy are contained in PB 151876, Office of Technical Services, Department of Commerce, Washington 25, D. C. ($3).

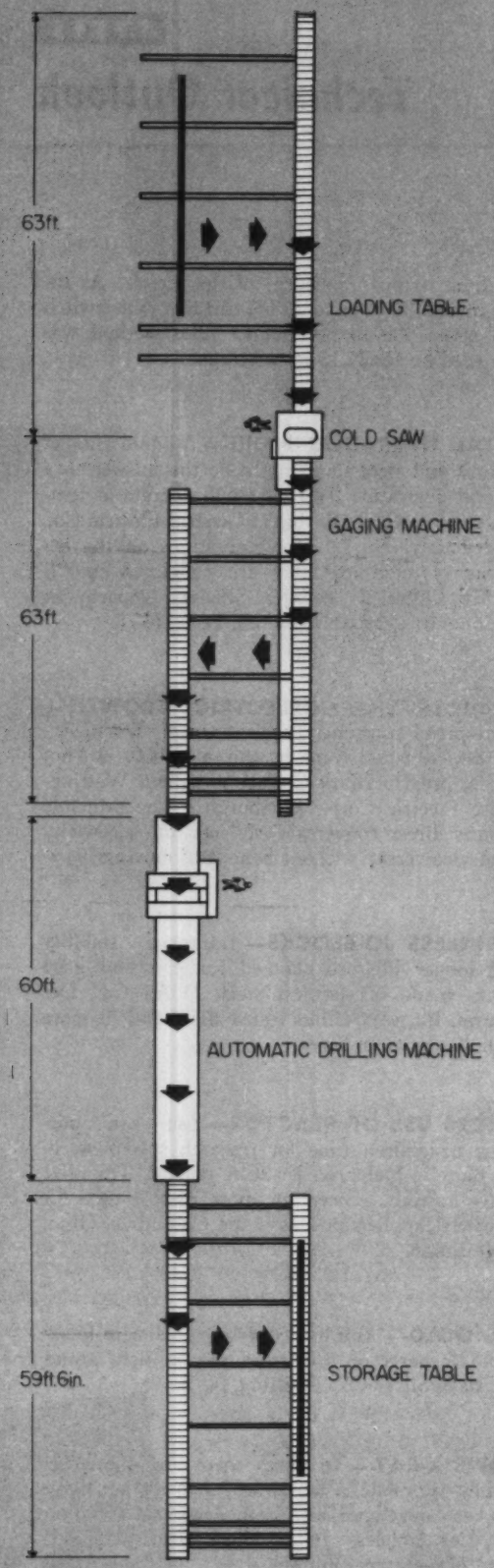
PREDICTS THERMOELECTRIC GROWTH— Widespread consumer applications of thermoelectric devices could come by the mid-1960s but not before, predicts Mark Cresap, president, Westinghouse Electric Corp., Pittsburgh. The principle permits direct conversion of heat into electricity (and vice versa) without benefit of moving parts.

STAINLESS JO-BLOCKS— Improved stability and longer life are claimed for precision gage blocks made of stainless steel. DoAll Co., Des Plaines, Ill., says it has tested the metal in more than 20 plants for a year.

OFFERS USE OF REACTOR—You can purchase irradiation time for research specimens in the Battelle Memorial Institute reactor. The offer partly answers a need for more reactor time for industrial applications, says the Columbus, Ohio, organization.

ALL GOLD— You can now buy gold with fewer than 10 parts of impurities per million, states American Silver Co., Flushing, N. Y.

MOVIE X-RAY—To check seam and spotwelds as they are made, a device called in-motion x-ray has been developed by North American Aviation Inc., Los Angeles. It can check welds at speeds up to 24 inches per minute.



Typical layout of the machine that moves, saws, and drills structural shapes. Beams or channels are sawed to length, then moved to a traveling gantry where holes are drilled. All work is done without handling the part

Transfer Line Speeds Structural Fabricating

Shapes are sawed and drilled without intermittent work handling. User says the machine has saved about 50 per cent of normal processing time

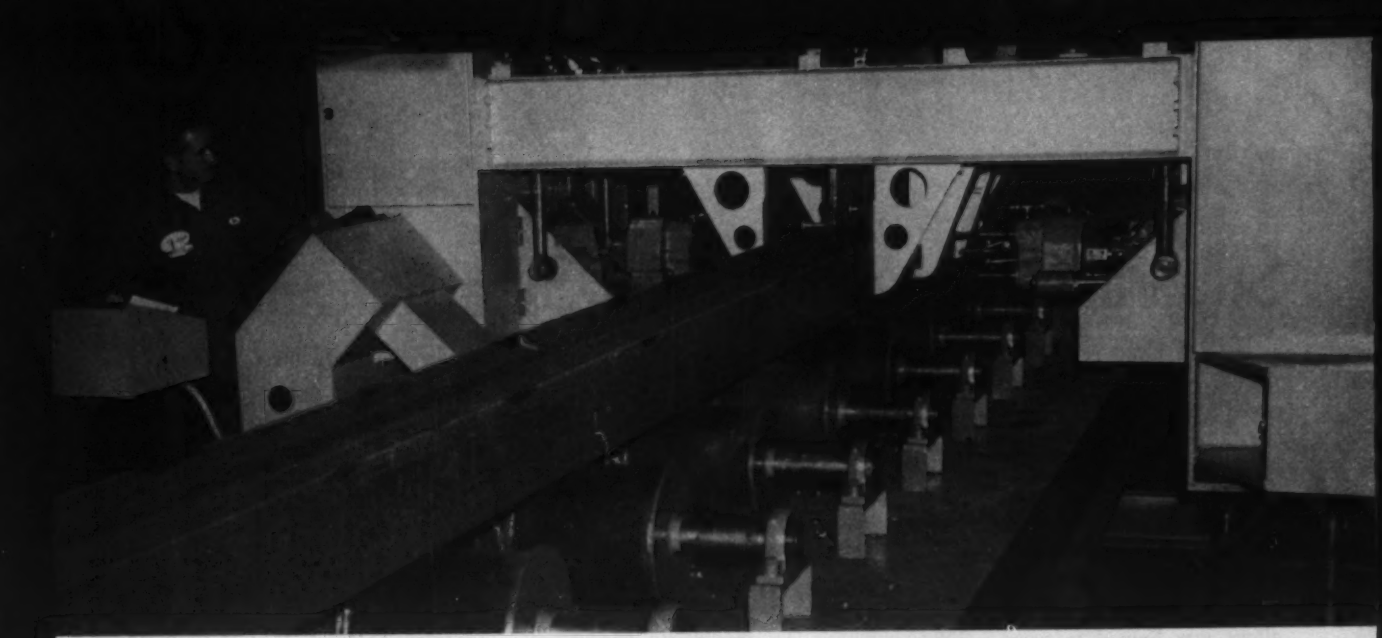
STRUCTURAL FABRICATORS are finding new and more productive uses for their sharp pencils.

Instead of figuring bids to the fourth decimal point — a practice that has driven many of them to the wall in recent months, they're figuring out ways to reduce their costs.

One of the most promising is a conveyorized production line developed by Mulfab Corp., a McKees Rocks, Pa., fabricator specializing in industrial furnace work. Benefits, says Mulfab, are these: 1. Direct labor costs are reduced by more than 50 per cent. 2. Production is increased substantially.

J. F. Mulach Jr., president, was speaking for many a fabricator when he said: "Unless we can find some way to cut our costs and make a legitimate profit, there's not much point in staying in business." Edwin L. Mead, general manager, accepted the challenge and designed new equipment to move, saw, and drill structurals. Result: The labor force needed to handle a beam was reduced from seven (craneman, burner, two hookup men, layout man, two punch operators) to three (craneman, sawing line operator, drilling line operator).

In most fabricating shops, half



At the control console, the operator positions a beam under the drill gantry. Two horizontal heads and one vertical one will drill the prescribed hole pattern in both the web and the flanges

of the direct labor cost goes into material handling. Men and cranes are constantly at work moving beams — stacking them on skids, spreading them out for marking and burning, restacking, carrying them to layout skids, rotating them as they're marked on flanges and web, transferring them to punch or drill, turning them as they're punched, and moving them to fitting skids.

• At Mulfab Corp., beams are cut to size and drilled in web and flanges without handling by man or crane until ready for fitting.

After a beam is placed on the loading table, it's conveyed to a roller track, which feeds it into the sawing line. Then it's clamped into a gaging carriage operated by two continuous chains. A steel measuring tape is set into one of the chains so that it can't be knocked out of adjustment. The operator reads the tape through an optical viewer and moves the carriage horizontally until the far end of the beam is the prescribed distance from the cutting face. Then he starts the circular saw, which drops as it severs the beam.

• Mulfab uses a German-built Ohler cold saw (Model 1000) and claims that it produces a "burrfree, square cut, comparable to a milled end." Tolerances are said to be within 1/32 in.

A transfer table takes the steel from the exit conveyor of the sawing line and also acts as a storage table in front of the drilling machine (see photo). Operated by one man at a control console, the machine has a traveling gantry with drill heads mounted inside—two horizontally opposed (for holes in flanges) and one that drills vertically (for holes in web).

First, the operator starts the rollers and brings a beam from the storage table onto the drilling bed. Then he runs the gantry up the line, grabs the beam with vise jaws, and carries it back to an electromagnetic stop (which is zero on a 52 ft scale). During drilling, the beam is stationary and the gantry moves to predetermined points. Guided by "beam sheets" prepared in the office, the operator locates holes by reading the scale through an optical viewer. The fixed gage principle satisfies at least 90 per cent of hole patterns, Mulfab claims.

• The machine puts holes in all faces in one pass, without layout. It will follow the contour of the piece being drilled regardless of camber or offcenter web.

Designed for beam and column work, Mulfab's Meadmaster will drill up to seven holes simultaneously (more, if larger drill heads are used). It handles I-beams, wide flange beams, and standard channels 6 in. to 36 in. wide and can also accommodate plates of almost any gage. Maximum width the line will take is 42 in.

After the holes have been drilled, the beam rolls onto the discharge track and then onto another storage table. From that point, it's carried by crane to the fitting and painting area. Mulfab will eventually eliminate the crane move by extending its conveyor line.

• Since installing its sawing and drilling lines, Mulfab estimates that it has cut its time on fabricated jobs in half. Labor and overhead costs have been reduced by 2 cents a pound. The combination of lower costs and increased fabricating capacity will permit the company to make competitive bids on larger jobs and move into heavy construction on a bigger scale.

"We expect the equipment to pay for itself in less than three years," says Mr. Mead. "Assuming a saving of 1 cent a pound—and that's conservative — the fabricator who does 300 tons of work a month should be able to save $72,000 a year."

Mulfab will build lines for other fabricators to their specifications. Selling price of the 250 ft line described above is $180,000, f.o.b., factory. The sawing line may be purchased separately for $79,000, the drilling machine and its auxiliary equipment for $101,000.

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Superalloy Forgings Leap Size Barrier

Nickel-base metals are being shaped into parts weighing up to 1000 lb. Although the project described involves wheel shapes, other configurations are already underway

By JOSEPH B. MOORE
and JOHN LUCHOK
Metallurgists
Wyman-Gordon Co.
Worcester, Mass.

LESS than two years ago, the forging capability of nickel base superalloys was limited to parts weighing less than 3 lb. The demands of aircraft, jet engine, and rocket motor designers for large forged parts capable of withstanding high temperatures focused attention on the need for new techniques.

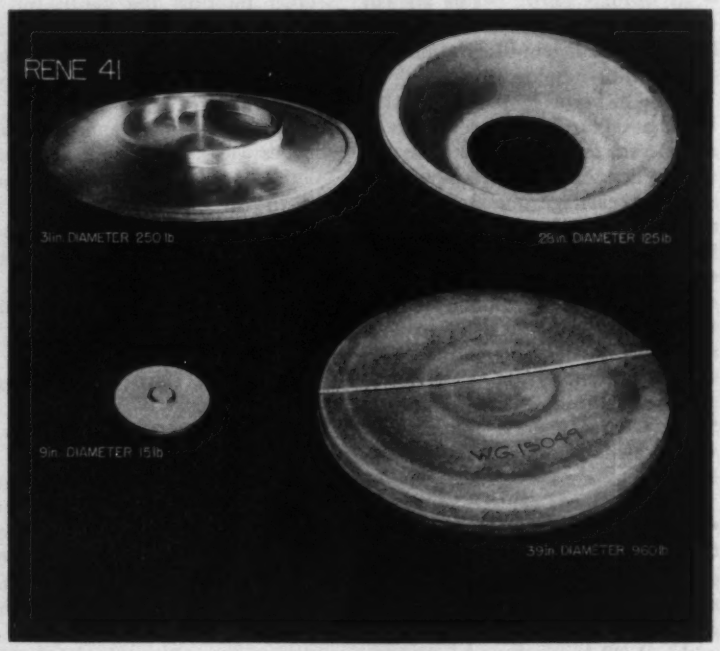
Today, parts weighing as much as 1000 lb are regular production items. We can make sizes and configurations which a short time ago were thought impossible for parts other than engine blades and sheet components for which the alloys were developed.

In addition, the large forgings have uniform properties throughout at a level equal or superior to that of blades or the bar stock from which they are made.

• The production techniques were developed in anticipation of the need for advanced jet engine rocket and aircraft components.

Projected high temperature operating requirements (in excess of 1300° F) for some advanced mechanisms led us to believe that alloys traditionally used for turbine wheels and shafts, compressor discs, rings, and structural parts, would be either marginal or unsuitable.

Nickel base superalloys selected for large forging development were General Electric's Rene 41, Pratt & Whitney Aircraft's Waspaloy, and Udimet 500 (Metals Div. of Kelsey-Hayes). They were chosen because of their demonstrated strength capabilities and the ex-



Here are examples of shapes made from the three nickel-base alloys. All were forged in the 1850 to 2150° F range. Parts weighing less than 100 lb were hammer forged. The remainder were press forged. Wyman-Gordon experts say parts produced by both methods show no apparent difference in structure or properties. Photographs have demonstrated that structure at the hub and that near the rim are alike

pressed interest of potential users.

We decided to adopt wheel shapes as the basic configurations upon which to develop techniques, primarily because we anticipated immediate user interest.

These objectives were established:

1. To attain properties equal or superior to those of turbine blades.
2. To develop uniformity of properties throughout.
3. To establish processing techniques that could be readily adapted to production operations.

• The successful forging of Rene 41, Waspaloy, and Udimet 500 alloys involves common difficulties, differing only in degree.

Taken as a class, the alloys require a rigidity of control on processing variables exceeding that normally required. Forging is done in the 1850 to 2150° F range. All the alloys are extremely sensitive to temperature, and after the optimum forging temperature has been reached, it must be held within 75° F throughout the entire forging pass.

The amount and rate of mechanical reduction and the reheat times used between successive forging operations are also critical. More passes are required to produce a shape than would be necessary with conventional forging metals.

Because of the tightly restricted working temperature ranges, little time is available for forging operations. Consequently, handling techniques are critical, and the proximity of the furnace to the press plays an important part in the forging success.

• Die design must be considered carefully. Metal quality must be high.

Dies must assure controlled flow of material throughout the forging contour during all the successive forging passes. Only by the exercise of optimum design can a uniform structure yielding uniform properties be obtained.

The production of forged parts from the three alloys, and other related materials, presents a host of new problems. The starting material must be of top quality, chemically uniform, and free from defects and segregation. The entire forging operation must come under close control, especially the forging temperatures and rates of deformation enforced on the metal by the dies.

The alloys can be produced in a wide variety of forged shapes and sizes with a consistently high level of properties throughout each part and with a structure of fine uniform grain size. The properties in each case equal or surpass those of comparable bar stock. Much of our effort has been directed at the production of wheel and ring type forgings. Developments are also underway to produce other shapes, including structural parts for other high temperature applications.

As design engineers set higher and higher limits of characteristics for forged components, metal researchers will continue to develop nickel superalloys to meet those demands. Forging people will match the pace with techniques to produce even larger and more complex units.

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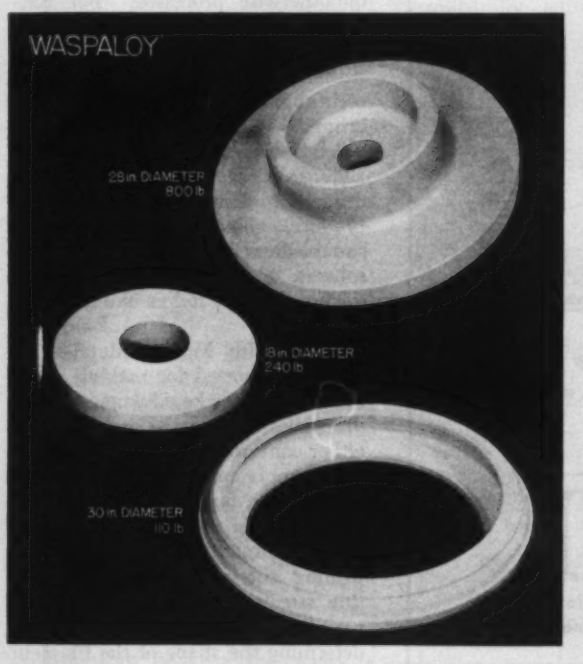


How Fibers Are Spun From Metal Melts

Patent literature discloses that methods similar to those used for production of textile fibers have been developed. Short or long fibers of flat or round cross section can be made

GROWING interest in fiber metallurgy (STEEL, Aug. 10, 1959, p. 126) is spurring work on production methods. Laboratory processes are far too costly. Commercial applications require methods that offer reasonable output, controlled lengths and dimensions, and practical costs. Processes now being investigated involve both metalworking and textile techniques.

Metals in fiber form have potential applications in many areas:

Porosity is controllable—important in filters, diffusers, mixers, flame barriers, and battery plates.

Density can be controlled for structural applications.

Combinations of metals, metal-ceramic, or metal-plastic systems could provide reinforced materials for brake linings, combine wear resistance with heat transfer, or engender a new family of fiber-reinforced plastics with superior impact properties and wear resistance.

• **Wire One Way**—An obvious approach is to start with wire. Fine wire can be made by standard drawing procedures, then cut to desired lengths. It's equally obvious that this can be expensive: The finer the wire, the higher the cost. An advantage: Close control of the diameter and shape of the wire, which can even have its as-drawn shape modified by rolling; the method would be the same as that used in making the "flat wire" which is used for bobby pins.

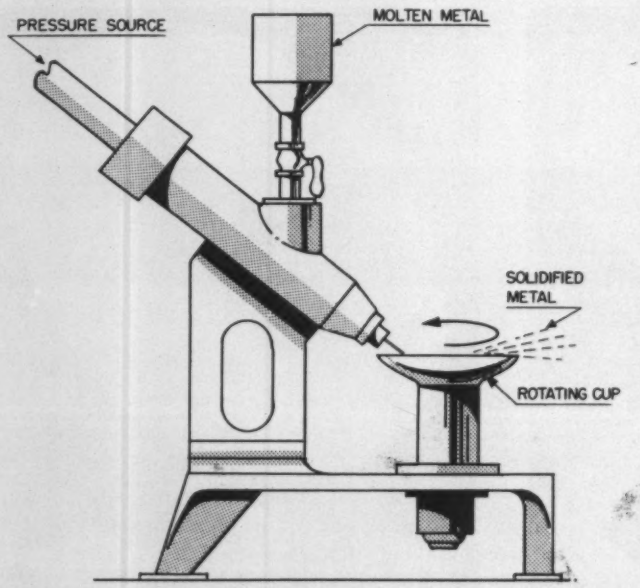
Wire is also the starting material for metal "wool," in many cases. Steel wool is a continuous chip; from the standpoint of collecting the product, and the cost of the operation, turning such chips from a bar is usually impractical. With wire as the starting material, the cutting edges shave off a chip as the metal moves past them. Sharp edges result from this cutting process, running the length of the fiber, and account for the ability of the product to dig into softer materials.

The structure of fibers produced by these methods has the typical grain pattern of wrought material. Fine grain sizes, elongated in the direction of working, are typical.

• **Fibers Made Directly**—Since the metal fibers are used in processes similar to those of textiles, synthetic fiber production methods might be modified to turn out metallic filaments. Recent patents show efforts in that direction.

The basic process in the manufacture of synthetic fibers is extrusion. The material is squeezed through a head (called a spinneret) containing holes of appropriate size. The resulting fibers may be stretched or otherwise processed. For continuous filament yarn, the fibers are wound on spools; "staple" fibers are made by chopping the continuous filament, which can be crimped if the straight fibers are objectionable (the smooth fibers slide over each other, making it difficult to form a thread or woven product). The material to be spun can be liquefied by dissolving in a solvent, or by melting; rayon is a solvent process, nylon is a melt.

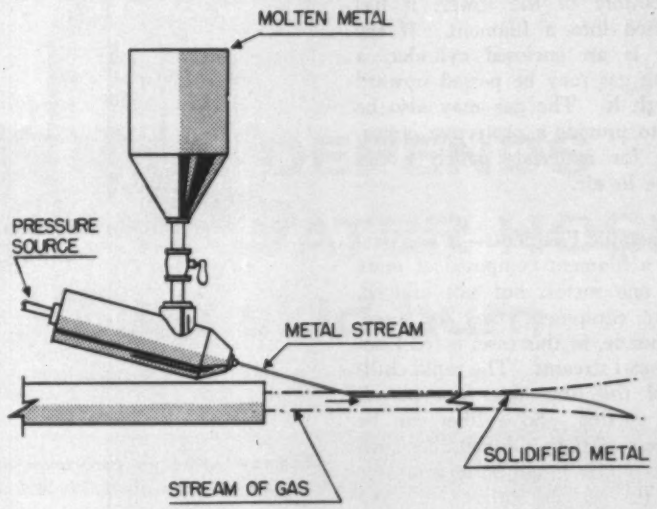
• **Start With Molten Metal**—The methods reported for making metal fibers directly take advantage of the properties of metals and produce either continuous filament or staple. A group of patents has been assigned to Marvalaud Inc., Westminster, Md. Molten metal is forced through an opening, controlling the pressure, so that the fine stream is continuous. Several variations in the method of cooling determine the shape of the filament cross section.



Basic method of casting fibers forces metal out of a nozzle, under controlled pressure, chills it on rotating plate

In the earliest patent (2,825,108) the stream of metal impinges on a curved chill plate. Here it rapidly freezes, and the resulting filament has a smooth underside which reproduces the surface of the chill block. The upper surface shows evidence of dendrites and shrinkage marks, since the fiber is formed by casting. The nature of the fiber is determined by controlling the temperature of the molten metal, the speed with which it leaves the orifice, the diameter of the orifice, and the surface speed of the rotating chill block at the point of contact. Orifice size mainly determines the width of the filament. Increasing temperature and decreasing ejection velocity make the castings thinner, and the relation between impingement velocity and ejection velocity determines whether the filaments will be continuous, discontinuous, or even flakes or powder. A single ejection nozzle is shown, but if the chill block can handle the heat input, more than one could be used.

Other arrangements have been developed for collecting the filaments, such as a rotating collection ring, and for chilling the metal, such as a continuous belt. In these methods, a metal heat transfer surface is used, and the fibers have a characteristic flat bottom and rounded upper surface. Successful filaments have been made from a number of metals, low melting ones like tin and lead and higher ranges such as aluminum and magnesium.



For round fibers, the metal stream is floated on a jet of gas or air. Length of fibers can be controlled

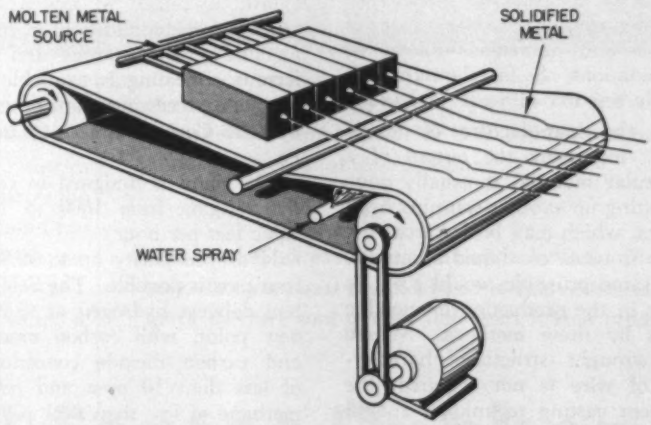
• **Metal Floats on Air**—When a round filament is desired, the type of cooling must be different. Use of a chill block becomes difficult or impossible; while it would be possible to obtain a curved lower portion, a ridge would exist at the area of contact of the metal and the block.

Round filaments have been produced by "floating" the molten metal on a gas stream.

The metal source is much the same as that used for the other methods described, and the velocity of extrusion through the orifice is in the same range. The metal is directed into a gas or air stream which is approximately horizontal; by the time it has moved down through the stream it is solid. The relationship between the speed of the gas and the diameter and velocity of the metal stream determines the final diameter of the filament. If the gas velocity is sufficiently high, the filament will be drawn out, and it can then be smaller than the diameter of the orifice in the feeding head. Still higher velocities will produce staple fibers whose length can be controlled by adjusting the process variables.

The process is similar to that used for the production of fibers from molten glass. Glass, however, is relatively viscous. For that reason, the gas stream is often heated and is generally used at high velocity to thin out the filaments. Colder streams produce coarser glass fibers.

Another method for making round fibers is to drop the stream of molten metal vertically. Again, it is discharged from an orifice but



A thin metal belt can replace the chill block. Water cooling is provided for chilling multiple strands

flows from a height; by the time the metal reaches the collector at the bottom of the tower, it has solidified into a filament. If the tower is an enclosed cylinder, a cooling gas may be passed upward through it. The gas may also be used to provide a protective atmosphere for materials which would oxidize in air.

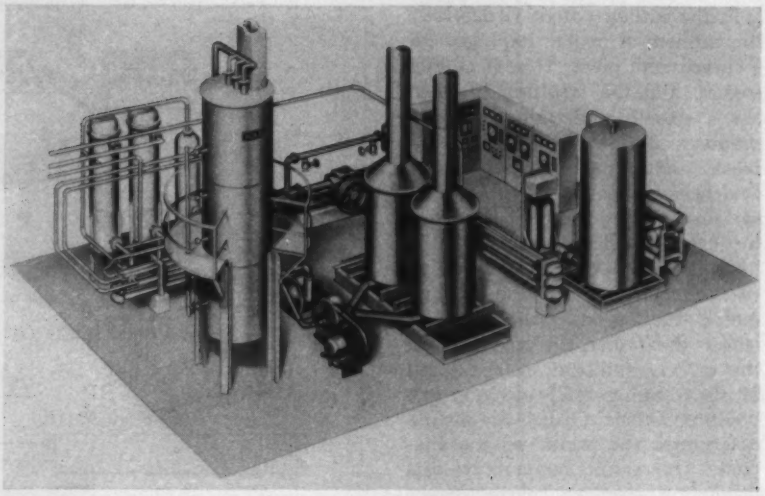
• **Bimetallic Filaments**—If users require a filament composed of more than one metal, but not alloyed, similar equipment may be used. The nozzle, in this case, is fed from two metal streams. The rapid chilling of the fiber does not permit much mixing. So a fiber can be produced which is bimetallic, such as one which would be lead on one side, tin on the other, with an alloyed layer between them. Or an outer surface of one metal could be produced on an inner core of another.

Any of the methods for chilling the filaments can be used with the special nozzles that make bimetallic fibers, so that the same range of shapes can be formed. Naturally, the restrictions on bimetallic combinations would be greater since more variables would have to be controlled.

• **Potential Commercial Value**—Use of the methods outlined will make possible the production of fibers ranging in cross section from flat—almost rectangular—to round, in varying diameters and thicknesses, and of lengths running from continuous to a few times the diameter of the filament. Materials can be any of a wide range of ferrous and nonferrous alloys, or combinations. So far, the refractory metals are too difficult to handle.

In the manufacture of textile fibers, increasing the output of a particular material is usually done by setting up another spinning head system, which may be fed from the same source of liquid material. The same principle would seem to apply in the production of metallic fibers by these methods. Where the wrought structure characteristic of wire is not required, the filament casting techniques should lower production costs.

Marvalaud Inc. is understood to be associated with American Viscose Corp., Philadelphia.



Compact hydrogen generation and purification system is a reduced capacity version of larger plants for hydrogen and ammonia production

Hydrogen Unit Offers Savings to Metalworkers

Easily packaged processing system provides high purity hydrogen for small volume application. Fully automated, it requires a minimum of supervision

PURE hydrogen at low cost for small volume applications in powder metallurgy and ferrous and nonferrous annealing is available in a complete processing plant developed by Selas Corp. of America, Dresher, Pa.

The plant is designed in capacities ranging from 1000 to 10,000 cubic feet per hour.

Hydrogen purity up to 99.99 per cent plus is possible. The Selas system delivers hydrogen at −100° F dew point, with carbon monoxide and carbon dioxide concentration of less than 10 ppm and residual methane of less than 0.01 per cent.

Where 99.5 per cent plus purity is required, costs range from 8.6 cents per 100 standard cubic feet depending on plant location.

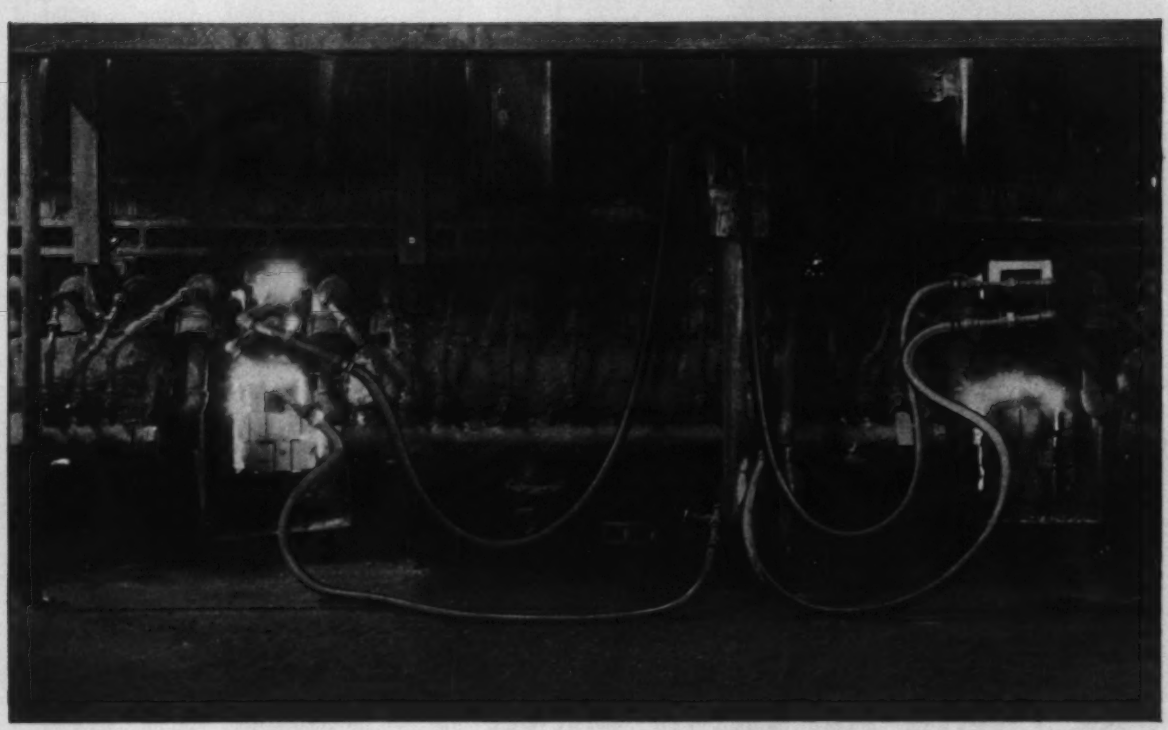
• **Fully Automated**—The unit is capable of continuous processing without operator supervision and is completely instrumented for self-protection of equipment. Product quality is constantly monitored and an automatic venting system prevents off-specification hydrogen from being passed to the use facility.

All components of the system are shop-assembled at Selas and then installed at the site. Included in the package are a compact control cubicle, a complete feed treating equipment, and one stage of shift conversion.

Molecular sieves—a porous material permitting the passage of molecules—are utilized for the purification cycle.

US RUBBER PEERLESS WATER HOSE

BIG STEEL MILL DEPENDS on U.S. PEERLESS WATER HOSE to prevent pipe skid burn



In the Fretz-Moon furnace of this Kaiser Steel Mill in Fontana, Calif., one length of U.S. Peerless® Water Hose ("the hose with the good brown cover") carries cold water to the pipe skids, another length carries the return hot water—up to 200° F. If the hose should fail or kink, the pipe skids would burn up and costly repairs and downtime would follow.

Kaiser Steel depends on Peerless to safeguard valuable skids and keep its pipe mill in operation. U. S. Peerless is part of the complete line of U. S. Rubber's industrial hose, engineered for use and abuse.

• • •

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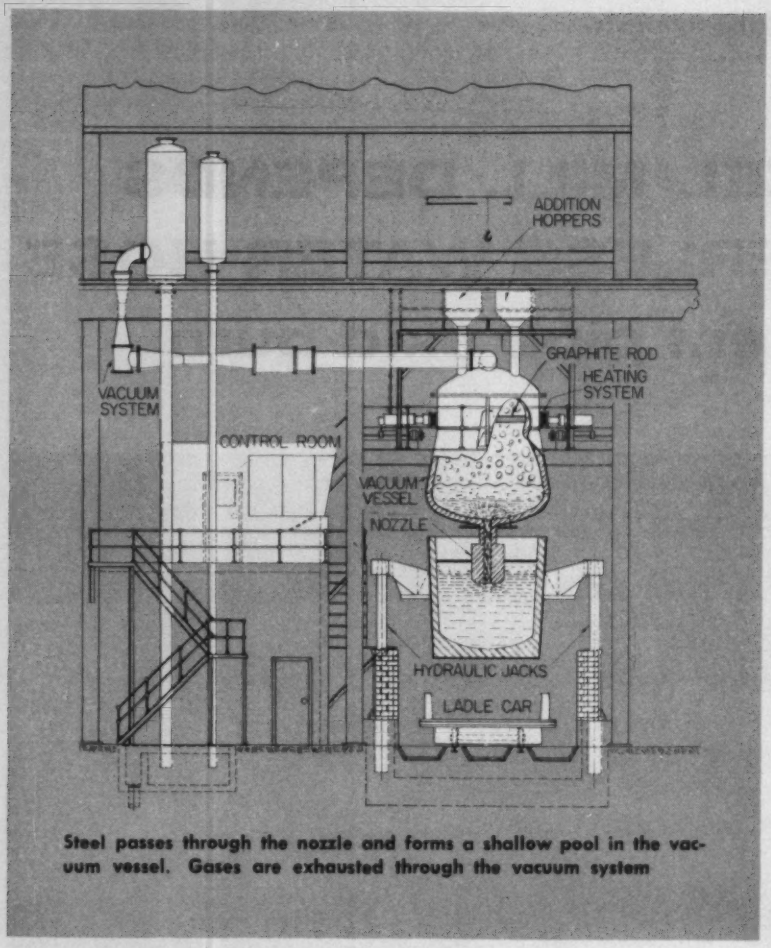


Steel passes through the nozzle and forms a shallow pool in the vacuum vessel. Gases are exhausted through the vacuum system

Degassing Method Is Used For Large or Small Heats

Crucible Steel and National Forge will use the same treatment technique to upgrade steels for special applications; equipment is tailored to melting facilities

STEELMAKERS often have different reasons for choosing a particular type of degassing equipment.

The Dortmund Horder Huttenunion vacuum treatment, developed in Germany, will be used at the Midland (Pa.) Works, Crucible Steel Co. of America, to process large heats of special steel. It will be used to treat smaller heats for special forgings at National Forge Co., Irvine, Pa.

Equipment for both companies will be designed and installed by Lectromelt Furnace Div., McGraw-Edison Co., Pittsburgh.

• Successive portions of molten steel are forced into a vacuum vessel, degassed, and returned to the ladle.

The ladle and the vacuum vessel above it are brought together until the refractory nozzle of the vessel penetrates the slag and the surface of the molten steel. Then a four stage, steam ejector pump evacuates the vessel; atmospheric pressure forces the liquid metal upward into the nozzle, sealing the vacuum vessel.

The vessel and ladle are brought closer together, causing more liquid steel to pass upward through the nozzle and form a shallow pool in the bottom of the vessel. Oxygen, hydrogen, and nitrogen are removed from the metal and discharged through the vacuum system. Vessel and ladle are then separated enough to let the treated metal return to the ladle. (But a column of the molten metal stays in the nozzle, maintaining a seal.) The degassed metal, returning to the ladle, mixes thoroughly with the untreated steel.

About 10 per cent of the steel in the ladle is treated in a cycle. The cycle is repeated until three times the weight of steel in the ladle has been treated.

Near the end of the treatment, when little oxygen is left in the steel, alloy additions can be made under vacuum from bins mounted on the top of the vacuum vessel. After treatment, the steel is poured into ingot molds.

A graphite resistance rod, mounted inside the vacuum vessel, heats it to the temperature of molten steel (about 2900° F) before the treatment. That prevents heat loss during degassing.

• The process will upgrade steel.

It has caused steelmen to reappraise the potential of degassing, says P. J. Wooding, manager of Lectromelt's vacuum furnace department. And it's applicable to electric furnace, open hearth, or oxygen converter steel production.

Treated steel contains fewer oxide inclusions because alloy additions are made after oxygen is removed; hydrogen flaking is eliminated. A certain amount of nitrogen

high lubricity in water

Stuart's SOLVOL liquid cutting compound

You may not be using soluble oils for "big chip" machining. But there is a super-lubricity compound—Stuart's Solvol—designed specifically for these jobs. A cutting fluid more and more of America's top companies are using for broaching, milling, and heavy-duty turret lathe work.

Compounded of a high-lubricity fatty oil, petroleum base, and a heavy-duty emulsifier, Solvol gives you the right combination of lubricity and cooling action for economical tool life at efficient machine speeds. Here's why . . .

Extremely fine particles of fatty oil are suspended in water like millions of delicate organisms under the sea. Fatty oil that comes from the sea—the best fat for lubricity money can buy. Solvol's high concentration of sperm oil allows chips to slide over the tool face without high friction and heat build-up. Stops chip welding and tool breakdown.

You get all these advantages in a water-mix compound that cools faster, eliminates smoke, handles a wide range of cutting operations at the lowest possible tool lubrication cost.

So, when you make the switch from straight oils to a water-mix cutting fluid, don't sacrifice lubricity. Because Solvol combines both—the cooling capacity of water, with the extra lubricity you need for economical machining.

Stuart

low friction · high finish

Stuart's CODOL liquid grinding compound

Grinding experts will tell you there's only one way to get a slick surface finish without going to extremely fine grit wheels or a straight grinding oil—and you don't have to give up wheel life or cooling action to get it.

That is by utilizing the balanced lubricating and scrubbing action of a water-mix like Stuart's Codol liquid grinding compound. For Codol's balanced formula provides the high surface finish advantages of a straight oil . . . in colloidal form . . . plus the cooling capacity of water.

Extremely fine oil particle size results in a near-transparent solution. Codol is not an opaque emulsion like most soluble oils . . . yet, it has none of the machine maintenance disadvantages of transparent compounds.

Use Codol when you want to keep grinding wheel inventory costs at a minimum and production efficiency right at peak.

Stuart

D. A. STUART OIL CO., LIMITED
2727 South Troy Street, Chicago 23, Illinois

Canadian D. A. Stuart Oil Co., Limited, P. O. Box 430, 43 Upton Road, Scarborough, Ontario, Canada

is also removed from the steel.

Steel users report that the treated metal, with improved cleanliness and reduced gas content, makes for greater product yield, better hardenability response, improved drawing and machining characteristics, and better mechanical properties.

The process also permits more accurate control of final steel chemistry. Gas removed from the steel is analyzed continuously, so oxygen content is known throughout the treatment. That makes more precise alloy additions possible.

• The method is valuable for tonnage treatment of steel for rolled products.

Crucible Steel's equipment, scheduled for operation early this year, will process rolling steels in heats of 40 to 200 tons from electric and open hearth furnaces. The company hopes to bring product quality up to new levels through effective carbon deoxidation of molten steel in the pilot production unit, says Joel Hunter, president. The unit is expected to produce about a million tons of treated steel a year.

Deoxidation is the most important function of the unit for Crucible Steel. But hydrogen removal is also desirable to prevent flaking in forgings, which represent a small portion of the company's product. Some nitrogen is also removed in the process.

Because large heats are processed, the ladle is held stationary during the treatment. The superstructure that supports the vacuum vessel, heating system, and addition hoppers rests on hydraulic cylinders. That permits the vessel to be lowered into the treatment position. It also supplies the up and down movement of the vessel during the treatment cycles.

About 10 per cent of the steel in the ladle (about 20 tons in Crucible's largest heat) is treated each 30 second cycle. Maximum treatment time: 25 to 27 minutes.

• The smaller unit is used to upgrade steel for special forgings.

The installation at National Forge is slated for completion about midyear. It will handle 10 to 60 ton electric furnace heats, reports Robert O. Wilder, president.

The company's relatively small heats are lifted from the ladle car by hydraulic cylinders mounted beside the track and brought into treatment position under a stationary vacuum vessel. The cylinders also provide the cycling motion needed for the treatment.

The process is completed in 12 to 24 cycles, each lasting 30 seconds; total time depends on the heat size.

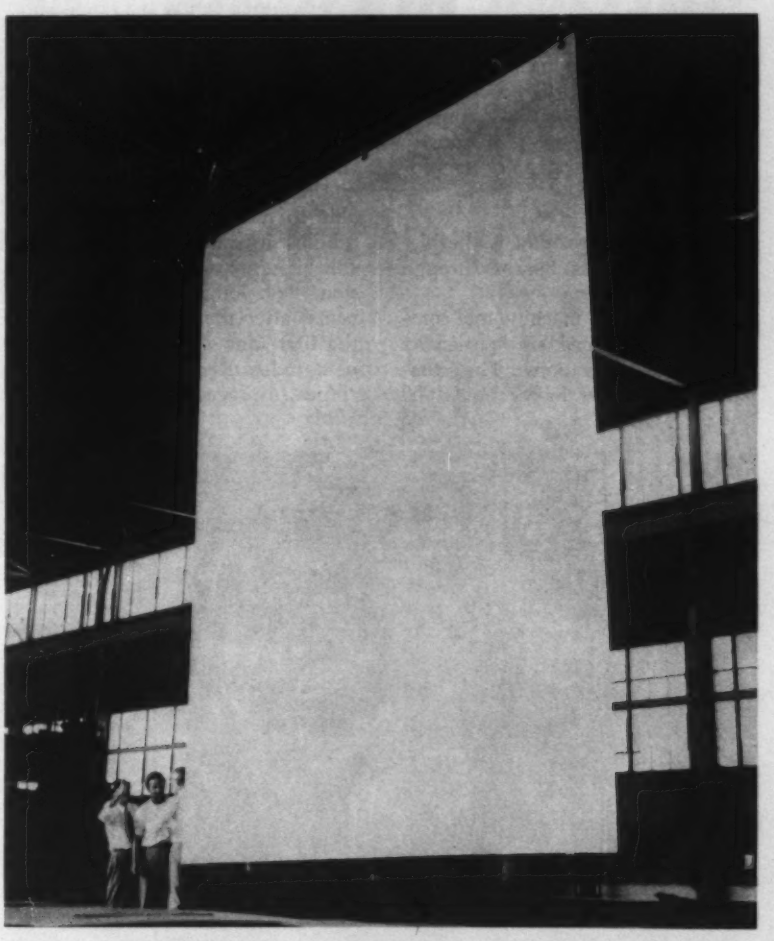
Hydrogen removal is extremely important to National Forge, to prevent flaking in forgings. And removal of oxygen before alloys are added makes for fewer, smaller oxide inclusions.

The company produces carbon, alloy, and stainless steels. It melts, forges, heat treats, and machines a variety of products, including crankshafts, rolls, and pressure vessels. Steel from the vacuum unit is suitable for teeming into several mold shapes used by the company.

• Performance of treatment equipment in Europe helps in calculating operating costs in the U. S.

The method has been under development in Germany for the last six years. It has processed over 80,000 tons of steel.

Using average American cost units, Lectromelt estimates that 50,000 tons a year can be treated for $5 a ton. If more than 500,000 tons are treated annually, that figure drops to $2.75 a ton. The cost includes five year depreciation of total capital cost, average steel plant overhead, refractories, labor, power, steam, and water.



BIG HOT ROLLED SHEET replaces as many as eight pieces of cold rolled stainless steel in aircraft and missile structures. A chemical milling process developed by Anadite Inc., South Gate, Calif., removes pits and scale, and produces aircraft tolerances. The process can be used on sheets as large as 12 by 25 ft. Previously used material was available in widths up to 36 in.

1960 Exposition Challenges Builders

Five year cycle demands that they create a brisk pace for machine tool progress. This fall they'll show more than 1000 machines to prove the pace has been maintained

WHEN members of the National Machine Tool Builders' Association committed themselves to an industry exposition every five years, in effect they also promised machine tool users a lot of technological progress, with a maximum of five years between major steps.

Eight months from now, the cream of metalworking's production minded managers will be crowding into Chicago's International Amphitheatre to learn how the industry has met the first step in its program.

• This year's exposition is the biggest yet. The dates: Sept. 6 through 16.

More than 130 machine tool companies have signed up to display production innovations. The companies will show more than 1000 machine tools—nearly all of them under power and in action. The exhibits will cover in excess of 7 acres, all on the main floor.

Cost to stage the event, officially called The Machine Tool Exposition—1960, will be well in excess of $1 million. That doesn't include the value of any machines displayed, nor the immeasurable quantity of dollars the industry has poured into research and development work to come up with machines worth showing.

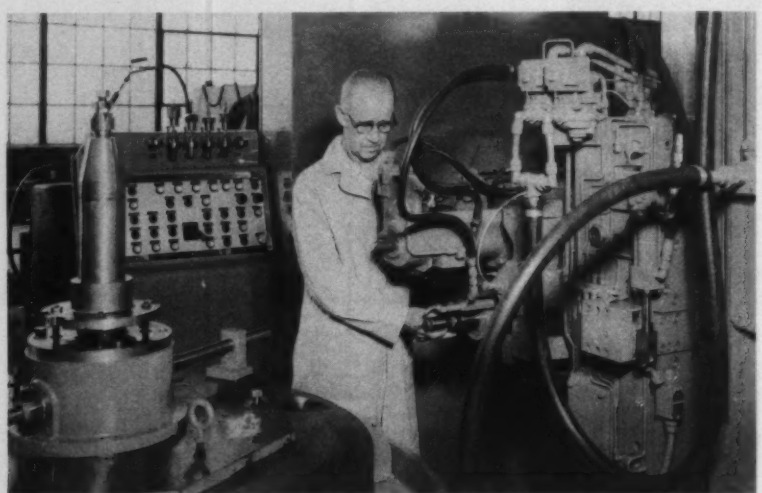
Almost no one pretends to be able to measure the return on an exhibit investment, but builders, still fighting back from the recession, look longingly at what happened after the 1955 exposition. In the first nine months of that year, new orders for cutting type machines averaged $61.4 million a month. In October, after the show, orders jumped to $99.15 million. November orders hit $124.25 million, December's $151.3 million.

Most builders feel at least part of the credit for the buying surge must go to their 1955 industry display. First, more than 100,000 potential buyers were exposed to new machines at work, with a chance to watch, pry, and question. Second, the exhibit forced a host of new developments to come at once, speeding the obsolescence of machines in users' plants.

Commenting on this year's exposition, George H. Johnson, president, Gisholt Machine Co., Madison, Wis., told STEEL: "Many new developments introduced will be two or three years ahead of the time they might normally appear."

• Prevailing trend will be numerical control.

Ralph J. Kraut, president, Giddings & Lewis Machine Tool Co., Fond du Lac, Wis., says the 1960 exposition probably could be called the Numerical Control Show. Another industry representative has a personal guesstimate that 60 to 75 per cent of the cutting type machines displayed will be numerically controlled.



DRILL SPINDLES on this horizontal machine are numerically controlled to drill and tap cylindrical and conical sections and simple contours. In announcing the machine, spokesmen for Barnes Drill Co., Rockford, Ill., say they have added two more controlled functions to this kind of machine. Vertical spindle movement, in-and-out column travel, and table rotation are all tape guided

Easier Inquiries

Expecting an attendance of more than 125,000, exposition planners are looking for ways to trim some time consuming jobs. One device: A plastic plate (like a gasoline or airline credit card) will be issued to each visitor. It will carry his name, company, and address in raised letters.

When the visitor wants literature or information, he'll hand the card to the exhibitor; the card imprint will be put on a form; and the information wanted will be checked off. There will be no time wasted filling in blanks or writing your name and address.

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HIG POSITIVE SEALING. . .HOLD
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Designed specifically for use in critical vacuum processing applications, S-C vacuum valves provide high flow rates . . . positive sealing . . . maintain uniform vacuum to within 0.5 in. Hg absolute for an indefinite period.

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Suitable for instrument, pilot or manual actuation, S-C vacuum valves are offered in flange or screw-mounted types, in sizes from 1 through 3 in. NPT.

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For more information write for Bulletin CV-100. Address Dept. ST-160, The Sinclair-Collins Valve Co., Akron 11, Ohio.

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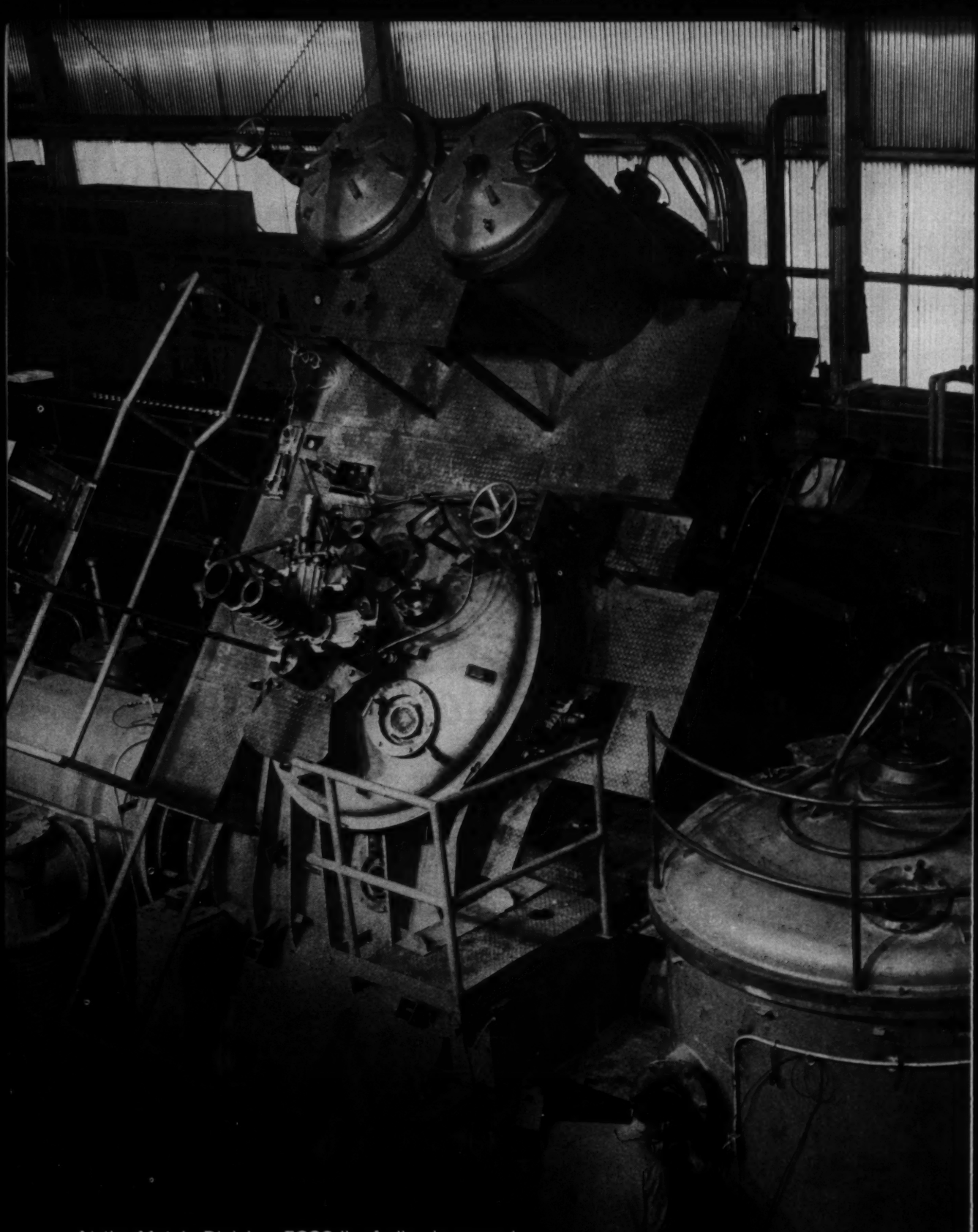


At the Metals Division, 5000 lb of alloy is poured in this high vacuum induction furnace—the largest in the world. Exact alloy properties can be obtained in heat-after-heat with laboratory consistency.

Are you after highest alloy properties in heat-after-heat?

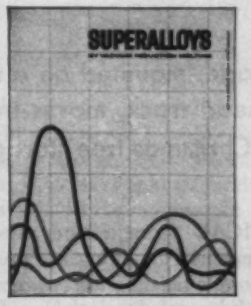
100 per cent alloy composition control assured by vacuum induction melting

Highly reactive elements enhance high-temperature alloy properties. Today, only one production metal refining process can effectively control the action of these elements, and—heat-after-heat—meet the most exacting alloy specifications.

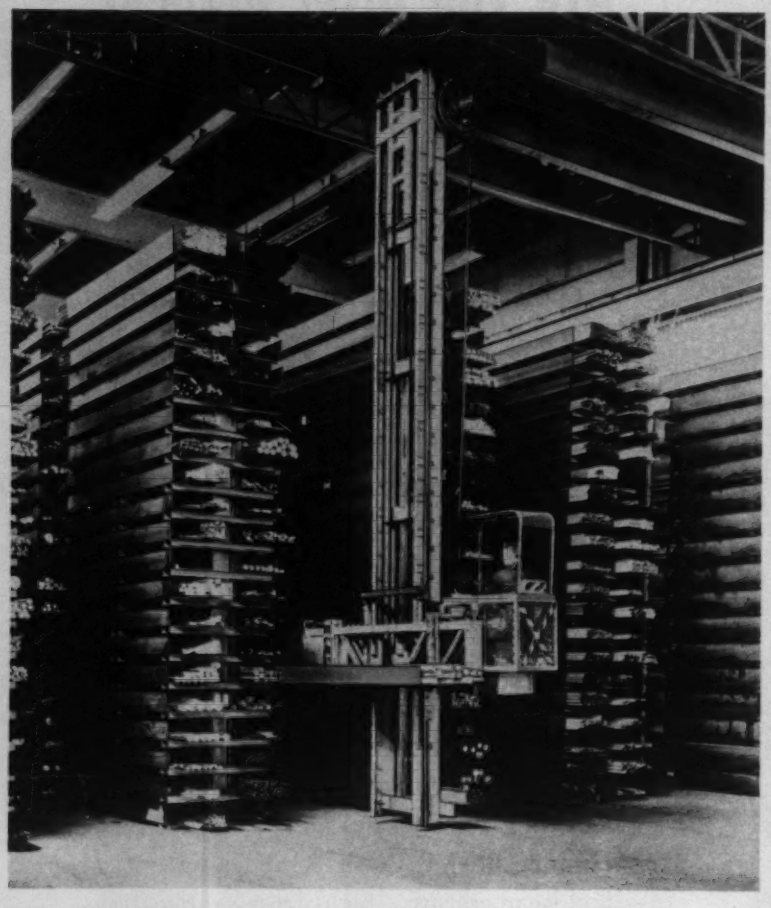
The process is vacuum induction melting, and the *only* specialist in this process is the Metals Division, Kelsey-Hayes Company.

In a specially designed plant which contains seven vacuum induction furnaces with a monthly capacity of 1 million lb, the Metals Division produces over 50 alloys for critical high-temperature, high-stress applications such as aircraft gas turbine buckets and wheels, missile and nuclear components. Alloys like UDIMET 500 and 700 were developed by Metals Division. The Division is the leading producer of vacuum induction melted Waspaloy, M-252, and other alloys.

Write for Your Free Copy of the Metals Division's new 36-page book—"Superalloys by Vacuum Induction Melting." Dept. 10A, Metals Division, Kelsey-Hayes Company, New Hartford, New York.



METALS DIVISION
KELSEY-HAYES COMPANY
NEW HARTFORD, NEW YORK



Suspended crane carriage picks a loaded storage tray from Christmas tree racks, clears the aisle, and moves to the weighing area for unloading

Steel Orders Filled Fast In Mechanized Warehouse

Carriage, mounted on a rotating column that hangs from an overhead track, moves trays of metal specialty items to and from Christmas tree storage racks

VERTICAL storage and mechanized material handling are providing more efficient steel warehousing at Edgcomb Steel of New England Inc., Milford, Conn.

More than 3500 steel, stainless steel, brass, and aluminum specialty items are stocked and 2500 to 3000 orders a month are filled.

• Expansion plans called for a new building; the company decided to integrate the storage setup with the structure.

The architect and builder, with the help of Chicago Tramrail Corp. engineers, designed the building for maximum use of available space.

The building is 60 ft wide and 27 ft high (floor to roof truss). Storage racks occupy a section 160 ft long; remaining space (a 100 ft section) is used for receiving material and processing orders.

Two single rows and five double rows of Christmas tree racks support 2700 storage trays. Small quantity items are stored in divided trays.

• Stock is moved to and from storage racks by a crane that hangs from an overhead track.

A top running bridge spans the storage area. An electrically operated rotating column, equipped with a carriage to support the trays, is suspended from an overhead trolley.

An operator, riding on the carriage, controls its movement. It can turn to either side of an aisle, move toward the storage racks or away from them, and travel vertically on the column. Safety interlock switches keep the column from striking the racks, and permit full rotation only when the unit is withdrawn from the aisles.

• Mechanized material handling, from receiving to shipping, helps the company handle most orders in 48 hours.

Material from mills is unloaded at the truck dock with a 5 ton top running crane, which places it in a bar unloader and bundle splitter. Then the carriage operator loads it on stock trays and moves it to the storage racks.

Orders are filled by the carriage operator. He takes the appropriate tray (color coded and numbered) from the racks. When only a few pieces are required, they're picked from the tray and placed on a cradle carrier attachment on the face of the carriage.

When the tray is picked off the rack, it is carried to the weighing area. It is either placed on a conveyor or moved to a W-frame, where a full or partial load can be deposited without moving the tray from the carriage forks. The tray is then returned to the racks.

An automatic printout device on the shipping scale stamps the weight of each shipment on the customer's order, simplifying bookkeeping and billing. Completed orders are picked up by the receiving crane and loaded on trucks for delivery.

New Adhesive Method Cuts Fabrication Costs

A new adhesive bonding technique for the assembling of cast pump parts trims rejections to zero and lowers fabricating costs, says Minnesota Mining & Mfg. Co., St. Paul.

The one part, high strength adhesive with an epoxy resin base is called EC-1386.

Formerly, the part was cast in one piece by the sand mold process; however, blowholes often resulted in rejection rates as high as 25 per cent. The new technique permitted making the pump into three parts. Other advantages:

It eliminates the need for lugs, bolt holes, and flanges and attendant machining operations.

Adhesives seal automatically, eliminating separate sealing or gasketing operations.

The bonding does not require the high heat necessary for welding or brazing operations, which may tend to distort castings.

No corrosive fluxes are required, eliminating neutralizing operations.

Adhesives permit the use of lower cost casting materials.

Skilled labor is not required for bonding operations, reducing production costs.

Bonding methods are adaptable to short run and continuous production.

Vanadium Tubing Extruded Experimentally

Experimental extrusion of commercially pure vanadium tubing is announced by the Wolverine Tube Div. of Calumet & Hecla Inc., Allen Park, Mich.

The hurdle: Impurities made vanadium too brittle to extrude. But a new ductile form and a new extrusion process make it possible to fabricate seamless tubing.

The process was developed by Wolverine Tube engineers in cooperation with Oregon Metallurgical Corp., Albany, Oreg.

Seamless vanadium tubing is particularly suited to the nuclear and process industries. The metal is light (22 per cent lighter than iron), has high temperature strength, excellent thermal conductivity and is corrosion resistant—it resists hydrochloric and sulfuric acids and salt water.

Photomicrograph of freshly grown diamond crystals covered with a thin film of catalyst metal. The film has been removed from one of the crystals (arrow) for purposes of illustration

GE Reveals Secret Of Manmade Diamonds

Process subjects carbon and a catalyst to high pressures and temperatures. Crystal shapes can be tailored to industrial applications. Diamond supply assured for future

THE WRAPS have been taken off General Electric Co.'s process for making industrial diamonds after four years of government imposed secrecy.

A carbonaceous material and a catalyst are placed in a pressure cell and subjected to pressures of 800,000 to 1.8 million psi and temperatures of 2200 to 4400° F.

A number of starting materials can supply the carbon: Graphite, carbon black, sugar charcoal, or carburizing compound, but graphite is the best. The catalyst can be chromium, manganese, iron, cobalt, nickel, ruthenium, rhodium, palladium, osmium, iridium, or platinum.

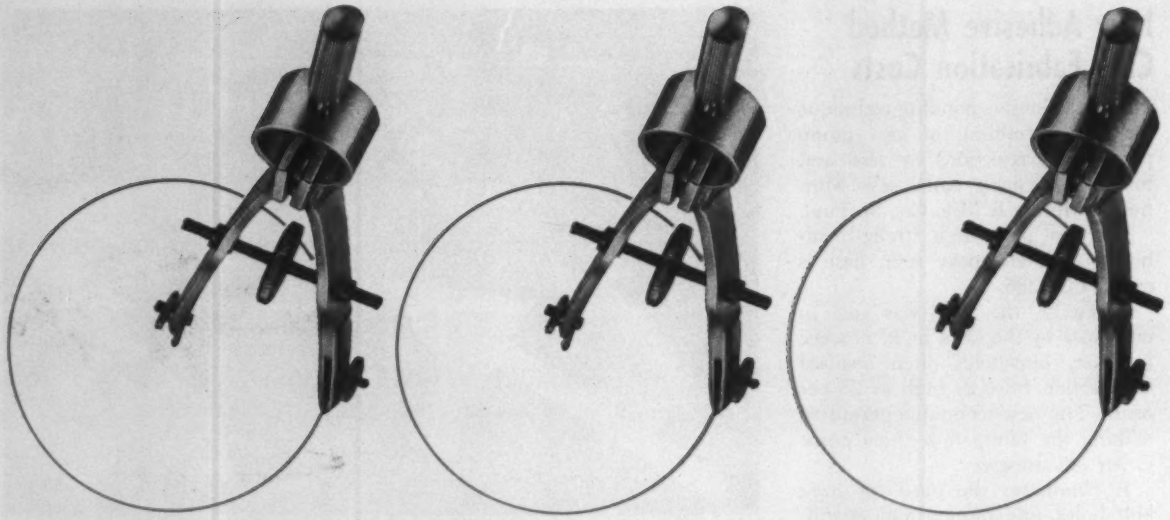
• **Short Process**—An industrial diamond is formed in a few minutes. The shape of the crystal varies with the temperature of formation. Cubes predominate at the low end of the critical temperature range; mixed cubes, cubo-octahedra, and dodecahedra at the intermediate point; and octahedra at the upper limits of the range.

By controlling shape and other characteristics it will be possible to tailor the diamonds to industry's requirements for special cutting, grinding, and polishing applications. Weighing less than a tenth of a carat, they have been sold in commercial quantities since 1957.

• **Potential**—GE says that the making of diamonds removes the possibility of the exhaustion of the world's diamond supply (we have no important domestic sources). The company claims that its product surpasses natural diamonds in various industrial uses.

Each year the U. S. uses more than 2 tons of diamonds for cutting, grinding, and polishing.

Several foreign firms have their own process. At least one relies on explosive charges to produce the kind of pressure and heat needed to make carbon into diamonds.



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As surely as a drawing compass can produce identical circles, you can be sure of getting Positive Duplication with these CINCINNATI CENTERLESS GRINDING WHEELS—and with *all* CINCINNATI WHEELS.

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A PRODUCTION-PROVED PRODUCT OF THE CINCINNATI MILLING MACHINE CO.

Bed Type Mill Comes in 14 Models, 34 Combinations

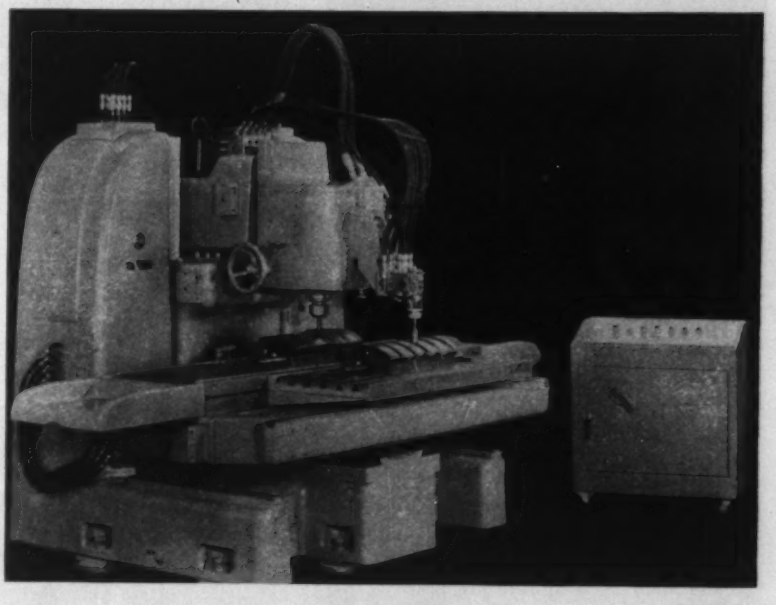
THIS MILL can perform as a production profiling machine, a three dimensional duplicator, and as a conventional milling machine. It's built to customer requirements.

You can get hydraulic, electro-hydraulic (automatic) tracer control, or numerical control. The machine is available with a hydraulic spindle from 15 to 40 hp. Hydraulic, screw, or combination hydraulic and screw feeds can be ordered.

Spindle speeds vary with horsepower—215 to 3000 rpm for the 15 hp model and 37 to 3000 rpm for the 40 hp model. Infinitely variable speeds and lower speed ranges can be ordered.

Table working surface measures 24 x 84 in.

For further information, *write* George Gorton Machine Co., 1110 W. 13th St., Racine, Wis.



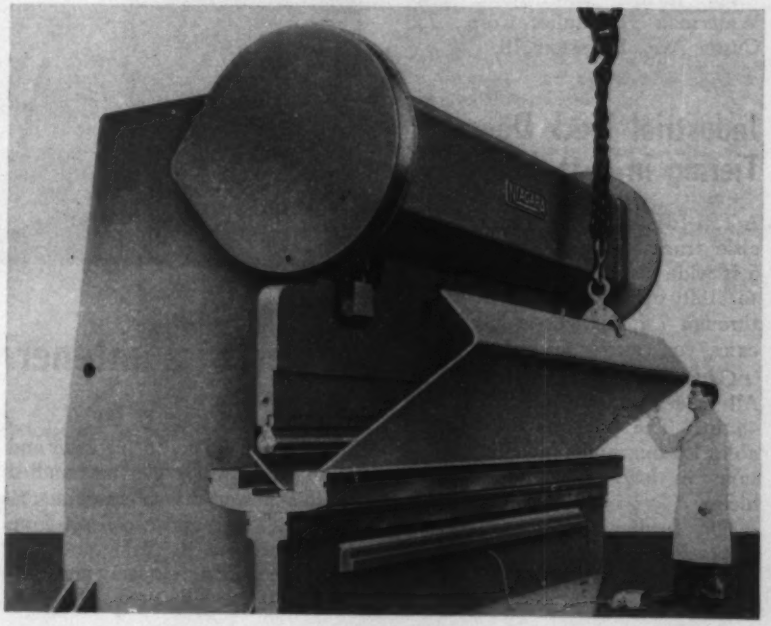
Press Brake Line Redesigned, Has Greater Capacity

OVER-ALL bed and ram lengths of the Series N press brake range from 6 to 24 ft. Bending capacities are for 12 gage to 1 in. mild steel. Tonnage ratings range from 90 through 1500.

Design changes: Choice of power or manual clutch, brake, and treadle; two speed transmission; rocker type end guide bearings; and a choice of special features and arrangements.

Construction is of one piece welded steel except in the larger sizes where the deep bed (extending below the floor) is removable. Both the frame and bed are designed for rigidity and longer die life.

Additional features include: Laminated nonmetallic ways for accurate alignment and long service, convenient power ram adjustment, double end twin drive with double reduction gearing, centralized pressure



type lubrication, convenient push-button controls, and a broad selection of gages.

For further information, *write* Niagara Machine & Tool Works, Northland and Longview Avenues, Buffalo 11, N. Y.

Light Solenoid Valves Have High Fluid Capacity

A LINE of lightweight, four-way, ac solenoid valves has high fluid capacity, high pressure ratings, and low current consumption. They can be applied to such things as machine tools, automatic controls, packaging machinery, and metal forming equipment.

The valves are rated at 3000 psi. The direct actuated spool requires no back pressure or minimum flow for proper operation. Full-size porting and simplified inner design provide a low pressure drop (about 60 psi at 5 gpm).

Inrush current is eliminated. There is no excessive solenoid heating with fast cycling. Cycling rates greater than 60 a minute are practical. Valves are available for 110 or 220 volt operation, using the same coils for any frequency from 25 to 60 cps. Power consumption is 25 watts per coil at all voltages.

For further information, *write* Waterman Hydraulics Corp., 725 Custer Ave., Evanston, Ill.

Industrial Truck Does Tiering in 6 ft Aisles

A TRI-LIFT mast design on narrow aisle trucks enables movement in 6 ft wide aisles, tiering of loads up to 180 in. high, and operation through 7 ft high doors. In many cases, you can reduce aisle width.

Capacity ranges up to 3000 lb. All models have a full free lift of 48 in. The full free lift also enables loading and unloading operations in low ceiling delivery vehicles.

For further information, *write* Dept. R9-40, Lewis-Shepard Products Inc., 125 Walnut St., Watertown, Mass.

Sintered Metal Filter Cleans Hydraulic Fluid

HYDRAULIC systems can be kept clean with the sintered suction filter made by Arrow Tools Inc.

The filter is designed for high flow capacity. The voids in the sinter filter wall give controlled porosity for high flow of liquids and stop passage of solids. Pressure drop is negligible.

For further information, *write* Arrow Tools Inc., 1945 S. Kostner Ave., Chicago 23, Ill.

Gear Spray Valve Saves Air, Lubricant

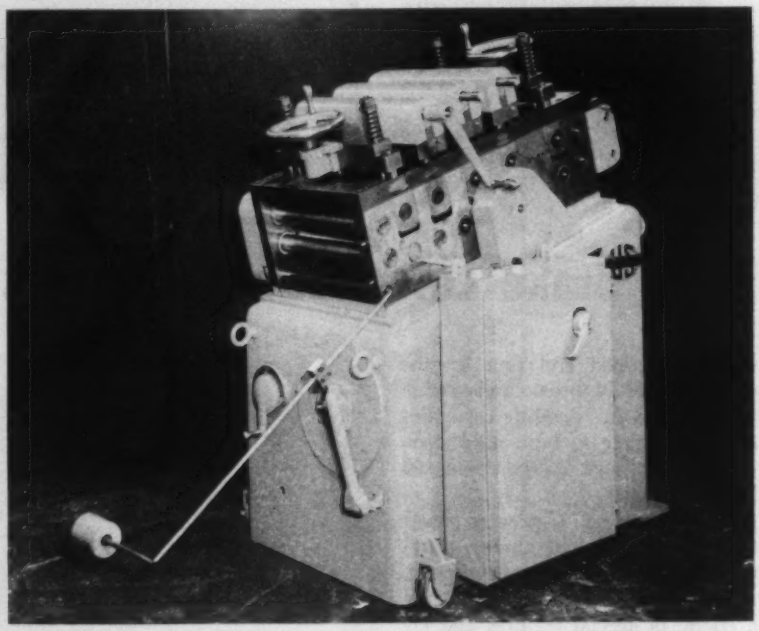
A GEAR spray valve for centralized lubricating systems requires only 15 to 25 psi air for proper results. It automatically shuts off the air when the lubricant feed shuts off. The company says this can produce substantial savings in air and lubricant.

No adjustment of spring tension in the valve is necessary to meet varying conditions of lubricant viscosity or temperature. Oils and greases suitable for pumping may be used.

The unit can be used with centralized systems planned for gear lubrication, or it can be added to existing systems where a switch to an all-purpose lubricant permits both gears and bearings to be served by the same pump.

When used with a Trabon centralized system, the spray valve automatically gives warning of air failure or nozzle blockage.

For further information, *write* Trabon Engineering Corp., 28815 Aurora Rd., Solon, Ohio.



Power Straightener Removes Coil Set

MATERIAL up to 16 in. wide and up to ¼ in. thick can be handled by this power driven straightener. The unit can remove coil set from such materials as cold and hot rolled steel, brass, copper, and aluminum. It's usually used with automatic feeding equipment for advancing material into punch presses, press brakes or other equipment.

The strengthener has a pair of power driven take-in rolls, six straightening rolls, a pair of power driven take-out rolls, and quick re-

ON DIRECT-MILL SHIPMENTS OF STAINLESS STEEL....

Bill Lucas (third from left), manager CSS stainless steel department, checking finish at mill inspection bench before approving shipment of material.

When you place your direct-mill requirements on stainless steel through Chicago Steel Service, The House of Stainless provides the EXTRA SERVICE of interpreting your specific needs to operating management at the producing mill.

We are in constant touch with these mills regarding individual orders—by direct line telephone and teletype. But that's only part of the story. To make sure that the product you receive meets your exact specification and is delivered in accordance with your production schedule, our mill specialists make frequent PERSONAL VISITS to the mills involved. There, they interpret your special requirements to operating department heads so that your needs are clearly understood by those responsible for producing your material.

Remember too . . . when you place your direct-mill order through The House of Stainless:

1. **Your company identity is never lost at the mill level;**
2. **You get exactly what you need at the best price and best delivery, because we know the capabilities of our many mill sources;**
3. **Because CSS is like "many mills in one," you have only one order to write and one invoice to pay when your order calls for diversified items.**

Yet . . . you get these benefits at NO EXTRA COST. And, of course, you can count on close, personal attention to your warehouse needs, as well.

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Edgewater rolled steel rings

Simple or complex cross-sections are formed so accurately by the Edgewater process, that machining is greatly minimized. These rings are rolled from solid blocks of steel. Hot working develops greatest strength and toughness in the metal. Diameters from 5 to 145 inches. Materials include carbon and alloy steels, stainless, tool steel, titanium.

Write for descriptive bulletin.

Edgewater Steel Company

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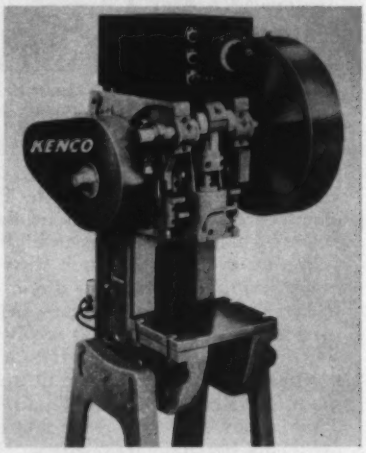
lease on the take-in and take-out rolls.

All rolls are hardened and ground. They're mounted in bronze bearings driven by hardened gears. The unit has loop control with electric clutch. The drive is a 5 hp variable speed unit with outputs from 10 to 50 ft per minute.

For further information, *write* U. S. Tool Co. Inc., Ampere (East Orange), N. J.

Presses Eliminate Hazards In Production Stamping

YOU can get Electro-Safe presses in 5, 8, 12, 15, and 18 ton capacities. The high speed units are designed to make effective use of automatic tooling arrangements. Built-in Electro-Safe controls are readily interlocked with safety devices to permit the effective use of overload detectors, or other checking devices that monitor proper feeding or sense malfunction during operation.



The drive has no clutch or flywheel.

This permits stopping or starting of the press at any point in the stroke.

The press operator must simultaneously depress and hold two widely spaced buttons (to the bottom of stroke) at the same time to single-trip the press. A key locked selector switch may be set to "continuous," "single trip," or "inch." The rotary cam limit switch can be readily adjusted to automatically

stop the press at any point in the stroke, before or after top center.

The presses can be used for high speed automatic setups and in multiple units for punching, forming, blanking, or bending of long extruded shapes. Full ranges of shut heights and stroke lengths are offered.

For further information, *write* Kenco Mfg. Co., 5211 Telegraph Rd., Los Angeles 22, Calif.

Front Drive Fork Truck Can Be Used Outdoors

FRONT wheel drive is a feature of a 6000 lb capacity fork truck available with a 10 ft standard lifting mast or an optional 7 ft size. It's suitable for indoor or outdoor use.

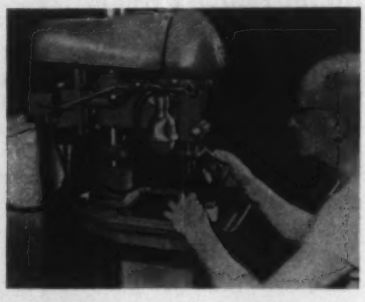
All units are equipped with power steering and a torque converter. The F-226 Continental engine is rated at 73 brake hp. Top speed is 30 mph.

For further information, *write* American Road Equipment Co., 4201 N. 26th St., Omaha, Nebr.

High Speed Drill Press Has Counterbalanced Quill

SPEEDS up to 12,000 rpm are possible on a 14 in. drill press, designed for high speed, small hole drilling involving precision and sensitivity. It's recommended for phenolics, nonferrous metals (such as aluminum, brass, and copper), and precious metals.

Drill breakage and work spoilage are reduced by a counterbalanced quill that eliminates quill drop at breakthrough on through holes. Preloaded, ball bearings lubricated for life are used. The sleeve drive is a 14 spline floating type. It includes a taper-hole mounted



It's the "*little things*" that pick the corporate pocket

IT'S the mark of a good executive to delegate authority. "Don't run a one-man show," the experts say. It is also the mark of a good executive to backtrack occasionally and check up on the results of delegated authority — particularly in those areas that may seem to require little executive judgment. These are the "little things" — *that count.*

Take, for example, the purchase of hand tools — wrenches, screwdrivers, impact sockets, pliers, etc. used on the production line or by the maintenance department. Just a routine buying job. You can pick 'em up anywhere — cheap.

But are they cheap? Poor-fitting tools cause accidents. Accidents cost money. Cheap tools damage screws, nuts, expensive parts. More cost. Cheap tools break easily, mean wasted time going back to the tool crib. More cost.

And with cheap tools, that's all you get — cheap tools. No advice, no benefit of an experienced sales engineer's tool and tool-use knowledge.

May we cite just a couple of examples of how top-quality SNAP-ON® tools sold by a SNAP-ON specialist saved these companies time and money.

Case A.

Impact sockets. SNAP-ON sales engineer inspected production line, suggested testing SNAP-ON power impact sockets along with brand then in use. *Result*: SNAP-ON sockets costing a few cents more handled ten times the work before showing wear. The company switched to SNAP-ON sockets, reports substantial savings.

Case B.

Tool kit for electronic assembly. SNAP-ON sales engineer inspected production line — recommended a special selection of tools to be purchased by employees. *Result*: There was such an improvement in work quality and output among SNAP-ON kit owners that the company arranged for every production employee to have a kit.

SNAP-ON Tools Corporation can cite hundreds of cases just like these, where qualified tool specialists recommended standard or special tools that resulted in faster production, greater safety, better work.

Perhaps hand tool purchasing is one of those "little things" that you or one of your associates should look into. If so, SNAP-ON would be happy to have a representative call and go over your hand tool program. Tools are a SNAP-ON representative's business — his only business. He can help you save money. Call your nearest SNAP-ON branch or write us, outlining your problem.

SNAP-ON TOOLS
CORPORATION
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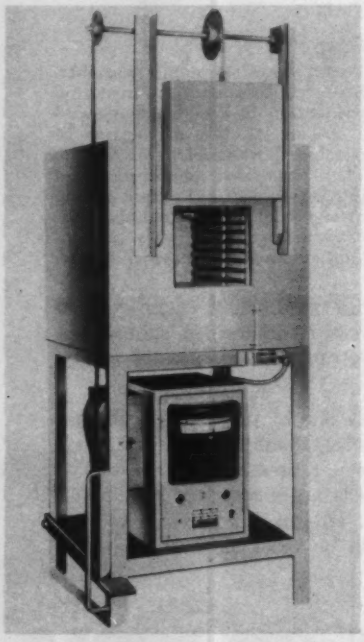
spindle pulley and a lapped quill. You can get single spindle models or any number of spindles in multiple spindle setups. Both single spindle or multiple spindle models come with production table, No. 72 1/4 in. key chuck and choice of single, three phase, or dc 1/3 hp motor.

For further information, *write* Dept. 1012, Walker-Turner Div., Rockwell Mfg. Co., 400 N. Lexington Ave., Pittsburgh, Pa.

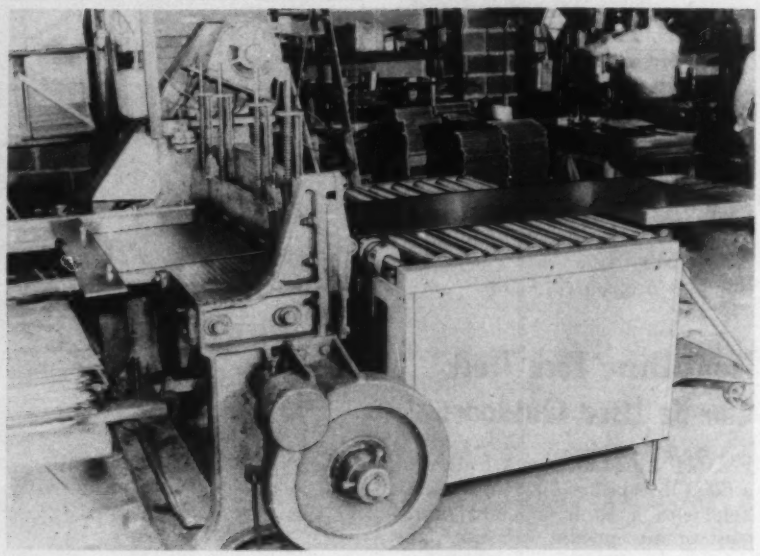
Furnaces Rated to 2000° F

THE Blue M Stabil-Glow furnaces (box type) are rated for continuous temperatures up to 2000° F. High wattage runup for rapid temperature rise and power saver features (normal low wattage operation for precise temperature control) allow the operator to use maximum wattage or a proportionate reduction.

Element switch control is push-button operated. When the set temperature is reached, wattage is automatically reduced to stabilize oven heat. This lowers current costs and eliminates overshoot and undershoot.



For further information, *write* Blue M Electric Co., 138th & Chatham Streets, Blue Island, Ill.



Shear Feed Cuts Manpower Requirements

WITH the AAC shear feed, one operator can outproduce two men shearing sheet stock (with greater accuracy too, says American Actuator Corp.). The operator only handles uncut stock when it's placed in the shear feed. Then he works with sheared blanks. Feeding is automatic.

Stock is fed into the front of shear (through blades) until the trailing edge passes over the front gage. When that point is reached, the sheet is automatically driven back against the front gage for shearing. The cut is made and the blank is removed. The remainder of the sheet is again driven against the front gage, and the cycle repeats.

The unit is available with automatic forward and reverse transmission, or with reverse action only. It's caster mounted.

For further information, *write* American Actuator Corp., P. O. Box 384, Stamford, Conn.

Conveyor System Routes Containers Automatically

WITH the Model 450 routing system, tote boxes, cardboard cartons, and other containers can be automatically routed to selected stations on a conveyor line. It can be used to direct containers to packing stations for broken lot order assembly or to direct work through processing stations.

Single containers or trains can be handled. A container can be diverted at any station, processed, placed back on the conveyor, and diverted again at another station for further processing.

The system is controlled from a console by a dispatcher. Routes are selected by depressing station keys. Coded instructions are automatically placed on the container by an inking printer. Code reading carton selectors control the direction of flow.

For further information, *write* Atronic Products Inc., 1 Bala Ave., Bala-Cynwyd, Pa.

Metal Repairs Made With Plastic Adhesive

A PLASTIC adhesive (Bond-Seal) which adheres to most metals is nonconductive and unaffected by corrosive chemicals. It is intended for watertight and oiltight repairs on metals and other materials where nonconductivity and resistance to acids and alkalies are required.

Superior adhesive qualities have

been shown with iron, steel, aluminum, wood, glass, concrete, and epoxy and polyester laminates. With steel, it has tested up to 3000 psi in tensile shear. Bond-Seal will not adhere to plastics like vinyl, polyethylene, or polystyrene.

For further information, *write* Beetle Plastics of Crompton & Knowles Corp., Fall River, Mass.

Stapling Machine Adapts To Carton Size, Shape

A STAPLING machine for carton bottoms is air powered. Foot operation frees both hands, speeds production, and lessens fatigue, says the maker.

The unit can staple a wide variety of carton sizes and shapes. The throat is 36 in. deep and 14 in. wide.

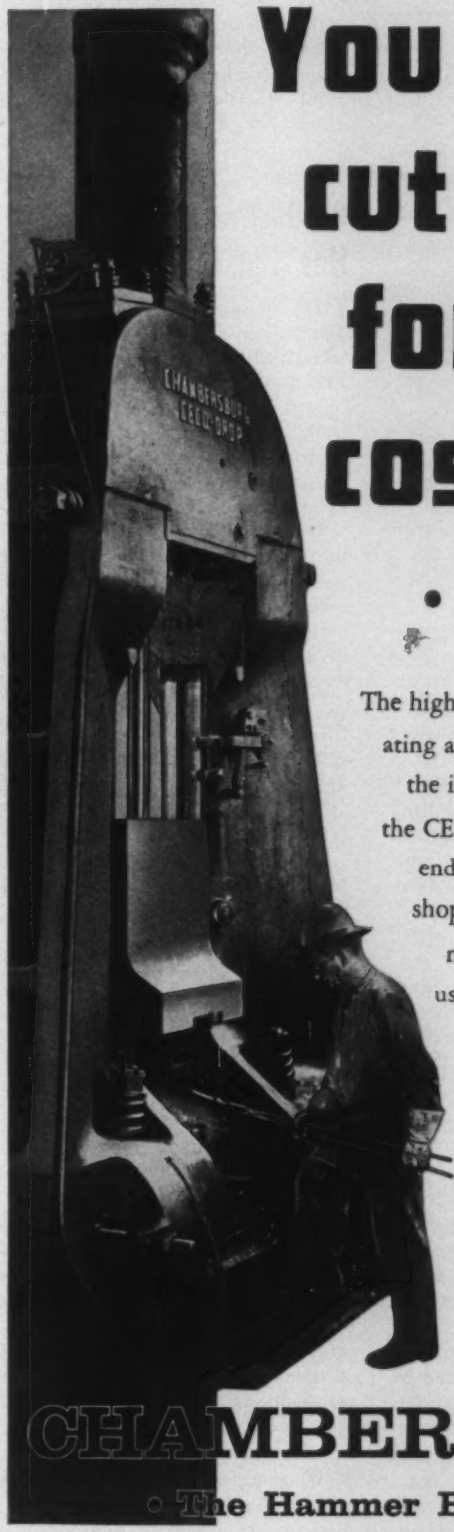
Over-all machine height is 47½ in. Weight is 70 lb. A magazine holds 200 staples in the ½, ⅝, and ¾ in. leg sizes.

For further information, *write* International Staple & Machine Co., P. O. Box 270, Herrin, Ill.

Welder Is Combination Spot, Projection Type

A COMBINATION spot and projection welder (Model ARKN) has these features: A combination large platen and standard arm arrangement, flexibility for die mounting, precision roller bearing ram, high speed, and ruggedness.

A hydraulic jack provides up-and-down adjustment of the lower extension arm. The lower exten-



You can cut your forging costs in • 1960

The higher production, lower operating and maintenance costs, and the improved safety features of the CECO-DROP account for its endorsement by leading forge shops all over the world. Why not join the more than 130 users who are being "thrifty in '60" and install Ceco-Drops in *your* shop.

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•

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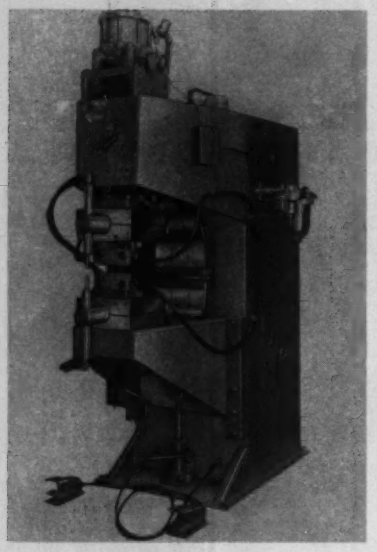


sion arm permits greater pressures without deflection. The platen bed is made of high electrolytic bronze. A self-adjusting pressure switch is used to maintain sure pressure firing.

Current capacities are 50 to 200 kva. A silicone steel transformer provides temperatures adequate for welding 17 gage commercial aluminum and 7 gage cold rolled steel. A two stage foot switch allows selection of manual or high speed automatic operation. Speed is controlled by a high speed weld timer circuit and an ignition contactor.

For further information, *write* Alphil Spot Welder Mfg. Corp., 1058 Pacific St., Brooklyn 16, N. Y.

Flaw Alarms Increase Operator Efficiency

THREE flaw alarms for electronic monitoring are available for the Sonoray, ultrasonic, pulse-echo flaw detectors. Test signals which appear within preset limits are detected by the flaw alarm to actuate recorders or warning devices. The alarm signal may be used to automatically initiate corrective action.

A flaw alarm lets the operator pay closer attention to materials under test, instead of constantly having to watch the cathode-ray tube.

Each alarm has a single time gate which is adjustable for position, length, and duration. It may be turned on or off without disturbing work or changing Sonoray settings.

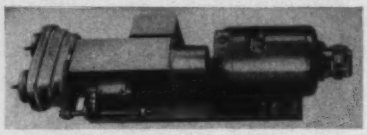
For further information, *write* Branson Instruments Inc., 40 Brown House Rd., Stamford, Conn.

Production Drilling Unit Has 4 in. Maximum Stroke

THIS hydraulically actuated, high production drilling unit, is a self-contained quill type with 600 lb thrust. Maximum stroke is 4 in. Spindle speeds are 1200 rpm and up. The unit mounts in any position. You can specify a single spindle unit or a multiple spindle head.

It's powered by a ½ hp, 1800 rpm motor. Cycle time is 2 seconds for a 3 in. forward and return stroke.

Size and weight depend on application. The unit is designed for individual application from mass produced precision components.



For further information, *write* John S. Barnes Corp., 315 S. Madison St., Rockford, Ill.

Direct Measuring Device Increases Lathe Output

A FAST, convenient, and reliable method of spotting position and directly measuring longitudinal cutting distance is provided by the Distometer (Model 555 B-245).

It is a constant guide which operates over the full travel of the lathe carriage. The unit can be referenced instantly at any point in the travel with pushbutton zeroing, and can measure movement continuously to any other point. Dial graduations are in increments of 0.002 in. and the range per revolution of the pointer is 0.500 in.

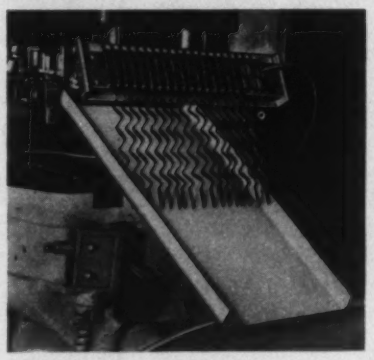
It isn't necessary to hold scales, adjust dials, or take time out to master against gage blocks. The Distometer is mounted on the lathe carriage and travels with the tool. It's equally effective for cutting shoulders, grooves, or bores.

In job tests, the use of the instrument increased lathe production more than 27 per cent, says the manufacturer.

For further information, *write* Federal Products Corp., 1144 Eddy St., Providence, R. I.

Unit Checks Part Ejection, Prevents Die Damage

A MULTIPLE feeler assembly protects dies from overloads by stopping presses when parts are not ejected on schedule. Properly ejected small parts striking against the multiple feelers of the Type 700-U assembly break a magnetic contact and send the required impulse to the missing parts control unit.



If the impulse is not received by the control unit, electronic circuits automatically signal the emergency stop circuit and prevent the machine from striking again. Gravity plus magnetic pull returns the feelers to normal position after each stroke.

For further information, *write* Wintriss Inc., 20 Vandam St., New York 13, N. Y.

FOR EVERY APPLICATION, THERE'S ONE CRANE OUTSTANDING...

IN PIPE MILLS: One of many P&H overhead cranes installed throughout the mill area, this P&H double-hook crane provides cat-quick but kitten-gentle handling of long and awkward loads of pipe. The twin-lift arrangement is typical of the complete attention P&H engineers give to custom-building cranes to your exact requirements. This means maximum crane efficiency with minimum operating costs because *your* crane is tailored for *your* job.

If you'd like more reasons why satisfied customers have made P&H the largest manufacturer of overhead cranes in the world, write for your free, information-packed copy of Bulletin C-42 to Dept. 111, Harnischfeger Corp., Milwaukee 46, Wisconsin.

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OUR 75TH YEAR

Photo Courtesy Quality Aluminum Castings Company — Waukesha, Wis.

POURING "HOTS" TAKES P&H PRECISION HOISTING

Putting ladles of molten aluminum "on the spot" for careful pouring is a P&H Zip-Lift's full-time job in this foundry . . . a job it handles with a mother's care. From furnace to mold this husky hoist answers every command with a sureness that pinpoints the Zip-Lift's close-spotting ability.

P&H Zip-Lift is "safety-built" too — made to include the positive safety features needed to protect workers from harm. One-hand, fingertip control provides instant response without drift — even under capacity loads. Control current is stepped down to a low 24 volts to protect operator against electrical shock. A double-safe dual brake system stops loads immediately . . . and either brake holds the whole load even if power fails. Limit switches guard against hoist abuse . . . cut maintenance.

Pleasantly enough, Zip-Lift accuracy and safety are priced for the shrewd buyer — starting as low as $200.

If precision safety and price are your buying yardsticks, you'll want a Harnischfeger Zip-Lift. It's fully explained in Bulletin H-20, yours for free from Dept. 203, Harnischfeger Corp., Milwaukee 46, Wisconsin.

P&H HARNISCHFEGER

...quality and service for 75 years

NEW literature

Write directly to the company for a copy

Cryogenic Fluid Properties

Physical property equivalents of some available cryogenic fluids are presented in a folding pocket card (Form 1341). The information includes boiling and melting points; critical temperatures and pressures; volume, mass, and thermal equivalents; and conversion factors. Distribution Dept., Linde Co., a division of Union Carbide Corp., 30 E. 42nd St., New York 17, N. Y.

Immersion Heat Exchangers

A 12 page bulletin (S-6620) describes Karbate impervious graphite immersion heat exchangers and circulating steam jets for heating or cooling corrosive solutions in all types of tanks. Nomograms and curves present design information, and sample calculations illustrate proper application of equipment. National Carbon Co., a division of Union Carbide Corp., 535 Fifth Ave., New York 17, N. Y.

Bimetallic Casting

Molecular bonding of ferrous components into aluminum castings is the subject of a brochure, "Bi-Metallic Casting by Tickle." Component metals include cast iron, carbon, alloy, and stainless steels, nickel, and titanium. Arthur Tickle Engineering Works, 21 Delevan St., Brooklyn 31, N. Y.

NEW BOOKS

Precipitation Processes in Steels, Organized by Department of Metallurgy, University of Sheffield (England), Iron & Steel Institute, 4 Grosvenor Gardens, London, S. W. 1, England. 322 pages, $11.76

This is a report of precipitation processes in alloy steels as presented at a conference held at the University of Sheffield (England) in 1958. It was organized by the Department of Metallurgy. The conference papers include discussions of intergranular fracture in steels, precipitation in ferritic and austenitic steels, and precipitation during creep.

High Temperature Materials, edited by R. F. Hehemann and G. Mervin Ault, John Wiley & Sons Inc., 440 Fourth Ave., New York 16, N. Y. 544 pages, $17.50

Recent developments in high temperature materials as presented at a symposium of the American Institute of Mining, Metallurgical & Petroleum Engineers, are presented in this text. Thirty chapters deal with cobalt and nickel-base alloys, cermets and intermetallics, refractory metals, strengthening by dispersion of insoluble particles, vacuum melting, effect of testing environment on properties, and oxidation resistance.

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For further information write to the Rolock Engineering Department.

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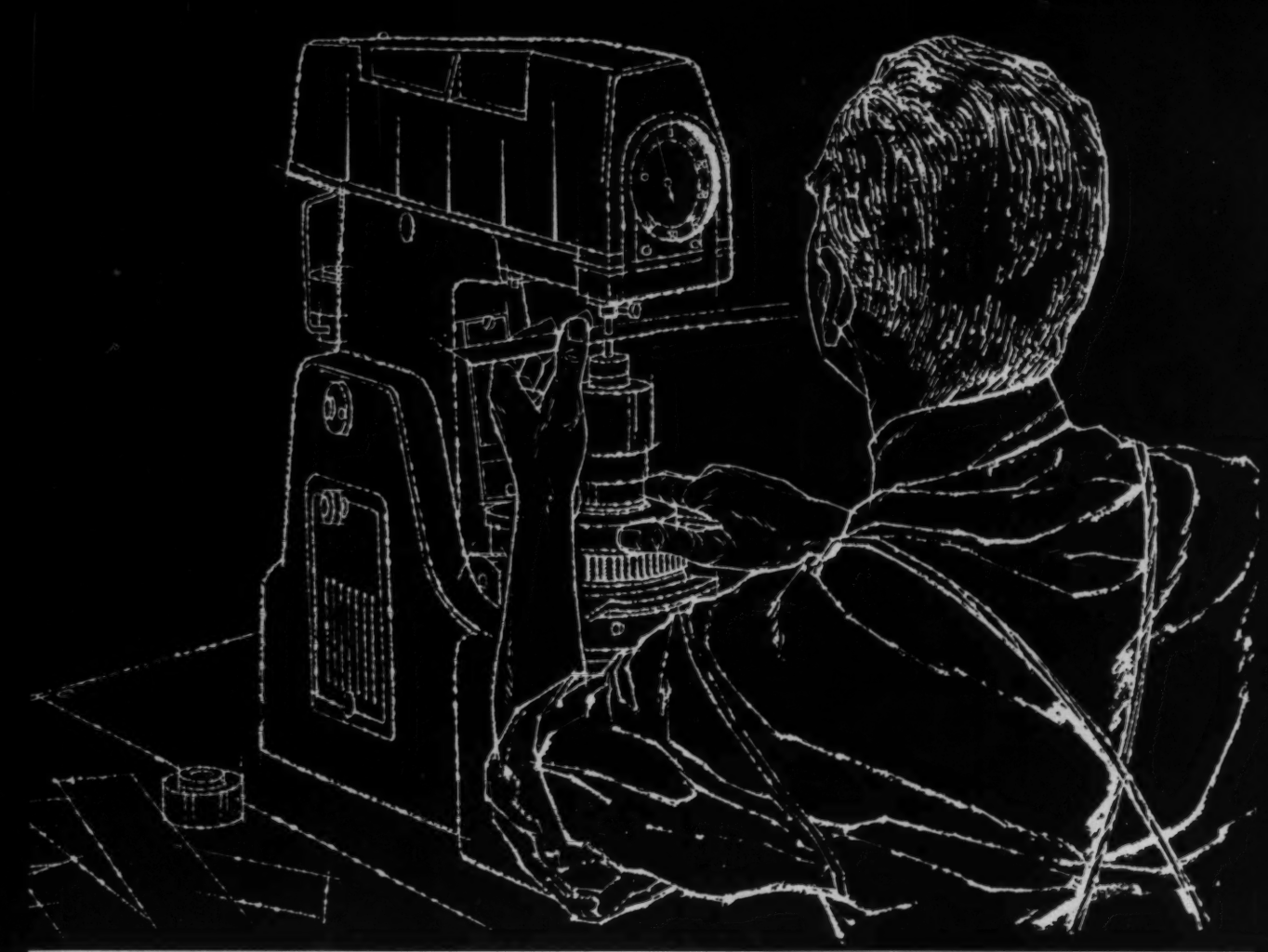

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Steel Pact Will Force Prices Up

A STEEL PRICE rise is inevitable.

The labor settlement will boost direct and indirect costs by $16 a ton over the life of the 30 month contract. It increases direct expenses immediately by about $3.50. U. S. Steel Corp. "proposes to continue the general level of its prices for the immediate future." Other companies have made similar statements. Does the "general level" rule out selective increases? Probably not. How long does the "immediate future" last? Probably not long.

SELECTIVE INCREASES— Across - the - board boosts in quotations are unlikely before next Dec. 1 when the first wage increase goes into effect. But count on selective raises before then. Many of the selective increases will come in the form of higher extras. Specialty items requiring a lot of production manhours are prime candidates for early action. Yet competition from aluminum may discourage increases in stainless items. Prices of barbed wire, nails, and fence won't be hiked because foreign producers are underselling American mills and capturing much of the domestic market.

PRESSURE OFF— Spared further anxiety about resumption of the strike, consumers are letting up a little in their efforts to get maximum shipments from the mills. Last week, a Pittsburgh consumer said he would "have to think about it" when offered some excess sheets. In Detroit, automakers say they won't cancel tonnage or ask for delayed deliveries because inventories are still below par, but they concede that they're not planning to commit themselves quite so heavily in the future. Appliance manufacturers believe sheets will be hard to get until June, so they won't gamble on stretchouts. Says a purchasing executive: "We may make a few changes in specs, but we aren't considering any big cutbacks. About 85 to 90 per cent of the steel we've booked is firm."

FABRICATORS OPTIMISTIC— With the steel labor crisis resolved, structural fabricators look for early improvement in building activity. Reasons: 1. Builders can count on an uninterrupted supply of steel. 2. They can estimate their costs more accurately after the price situation has been clarified. Fabricators believe it will be at least two months before they'll be able to get their inventories in reasonable balance.

SHIPPING HEADACHES— Steelmakers' efforts to ship at capacity are being hindered by a shortage of trucks and trailers. One reason: Some operators quit business during the strike. Any truck that can carry steel today can get a load, so drivers aren't deadheading back to the mills. They try to get loads from one city to another. Some aren't returning to home base for a couple of weeks, or whenever they get a load for that point. Pittsburgh mills are having trouble getting truckers to carry steel to small towns in West Virginia and Pennsylvania. One mill waited two weeks for a truck, then switched to rail shipment at the customer's request. The buyer decided that an inconvenient delivery would be better than none.

PRODUCTION HOLDS— Last week, steelmakers operated their furnaces at 95 per cent of the industry's new (1960) capacity. Production was about 2,707,000 ingot tons. In the previous week, output was 2,726,000 tons—equivalent to 96.3 per cent of the Jan. 1, 1959, capacity.

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*Current prices were published in the Jan. 4 issue and will appear in subsequent issues.

Steel Imports by Customs Districts—1959*

(Net tons)

Products:	Atlantic Coast	Gulf Coast	West Coast	Canadian Border	Total
Ingots, etc.	13,599	11	35	16,731	30,376
Wire rods	152,736	91,186	34,029	51,595	329,546
Rebars	229,185	280,340	86,176	52,809	978,056
Carbon bars	71,444	27,896	14,278	28,421	142,039
Alloy bars	1,039	.....	50	602	1,691
Drill steel	159	104	169	542	974
Skelp	180	.....	.....	.....	180
Plates	33,101	45,360	30,885	51,610	160,956
Sheets (HR & CR)	19,025	21,405	33,870	55,403	129,703
Tin & terne plate	.....	2	16,675	4,281	20,958
Large shapes	142,344	124,981	28,127	62,165	357,617
Small shapes	86,239	62,125	17,297	32,251	197,912
Rails, accessories	1,811	1,133	1,502	1,708	6,154
Sheet piling	1,198	636	848	2,567	5,249
Wheels, axles	.....	.....	.....	629	629
Pipe, tubing	64,123	131,760	150,533	18,525	364,941
Barbed wire	21,286	31,132	5,907	1,891	60,216
Round wire	78,319	37,243	45,555	12,018	173,135
Flat wire	18,953	13,156	3,317	1,989	37,415
Galvanized fencing	34,092	14,953	6,058	3,949	59,052
Wire nails	107,273	49,744	56,282	5,809	219,108
Bar iron	37	.....	.....	6	43
Cast pipe	581	163	7,357	463	8,564
Malleable pipe	1,836	229	2,346	172	4,583
Castings, forgings	3,880	320	514	3,060	7,774
Die blocks	431	.....	206	24	661
Saw plates	20	.....	15	2	37
Fabricated shapes	3,019	37,910	5,122	10,804	56,855
Sash, frames	1,764	411	309	.....	2,484
Wire rope	16,394	6,193	4,826	2,248	29,661
Staples	3,353	1,804	1,646	400	7,203
Fasteners	17,925	2,833	7,580	10,840	39,178
Bale ties	729	702	173	24	1,628
Cotton ties	1,240	14,172	7,139	.....	22,551
Pig iron	109,476	34,594	13,767	287,677	445,514
Sponge iron	5,917	.....	.....	1,148	7,065
Ferromanganese	40,554	1,739	2,361	7,565	52,219
Ferrosilicon	32	1,882	14	2,756	4,684
Ferrochrome	35,535	17	64	2,076	37,692
Other ferroalloys	1,058	104	50	2,997	4,209
Total 1959 (nine months)	1,319,887	1,036,240	585,082	737,757	3,678,966
Total 1958 (12 months)	818,463	553,038	344,929	333,429	2,049,859

*Nine months.
Data from U. S. Department of Commerce.

Steel Import Tide Rising

EVERY PENETRATING appraisal of the American steel industry's prospects in the sixties emphasizes the threat of rising foreign competition.

The home market problem is especially vexing for steel executives. For good reason: In 1959, the nation became a net importer of steel for the first time. In the first nine months, 3.7 million tons came in, 175 per cent more than in the like 1958 period. At the same time, exports of 1.3 million tons were off about 36 per cent.

• Those figures dramatize the nation's changing position in world trade and raise the question: What to do to meet the challenge?

Foreign penetration of the American market was stimulated by the 116 day strike last year. But marketmen say a long term uptrend in imports has been underway for some time—while volume is relatively small tonnagewise, the ratio of imports to domestic mills' production and shipments has been rising steadily the last several years.

In 1957, imports equaled 1.5 per cent of American shipments; in 1958, they amounted to 2.8 per cent; and in 1959, they were 5.4 per cent. On a product basis, the 1959 ratio was really alarming. During the first half of the year, wire rod imports were equal to 28 per cent of American producers' shipments, reinforcing bars 35 per cent, nails 54 per cent, and barbed wire 105 per cent.

• Steelmen say the long term uptrend in imports is the logical outcome of high steel employment costs in this country.

Even the labor union doesn't dispute published data which show American steelworkers are paid three to seven times more than their counterparts abroad. The tremendous cost advantage enables foreign producers to quote prices in the American markets which run as much as $55 a ton under the domestic level.

Unfortunately, the wage differential can't be offset by lower raw material costs alone. And even if maximum profits were realized, steelmen say overseas steel could still undersell the American product. That was stressed in last year's wage contract negotiations. The industry pressed for a noninflationary settlement that would permit a

Steel Imports by Origin

(Net tons)

Source:	1959*	1958
Belgium-Luxembourg	1,122,317	798,465
West Germany	601,572	247,631
Japan	530,933	297,662
France	480,257	188,284
Canada	442,534	245,563
United Kingdom	163,626	113,935
Netherlands	77,719	56,720
Asia & Africa	53,606	1,252
Sweden	50,853	49,182
Italy	50,811	24,965
Australia & Oceania	44,590	38,102
Norway	43,889	14,070
South America	11,357	13,396
Total	3,770,108	2,129,596

*Nine months.
Data from U. S. Department of Commerce.

wage hike without an accompanying price boost.

• Foreign steelmakers are in a better position than ever before to supply a substantial portion of the American market.

Fifty countries now have steelmaking capacity compared with only 25 a quarter of a century ago. Producing facilities are modern and are being expanded steadily. The American Iron & Steel Institute predicts there may be 71 steelmaking nations before the 1960s end.

The situation promises increasing competition as time passes and the necessity for the domestic industry to strengthen its position through increased productivity and greater all-round efficiency. Most American steelmen think foreign competition will be a permanent factor from here on. Robert M. Buddington, vice president-sales, Inland Steel Co., sums up the reasons for that view:

1. Foreign producers have demonstrated they can undersell American mills by 20 to 30 per cent. 2. They operate in a political atmosphere that's conducive to stability in labor costs. 3. Their producing capacity is being expanded with modern facilities. 4. The quality of the steel they produce has been improved by new facilities. 5. They have adopted more aggressive marketing tactics. 6. Foreign countries must export to live.

• The bulk of foreign steel sold in this country is moved through New York importing houses.

Foreign sales representatives are also at other strategic points, particularly Gulf and West Coast ports, and more recently at Great Lakes ports. There are a few foreign mill depots (chiefly in the Southwest) which handle oil country goods. The establishment of direct mill agents is expected to be the next step by the foreign mills. The move will probably be followed by the establishment of mill depots. So far, practically all the imported steel reaching Great Lakes ports via the St. Lawrence Seaway has been on consignment.

The U. S. Government's position on steel imports is somewhat nebulous. Generally, the administration seems to be for free trade, but it may protect import-hurt industries

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Walkies

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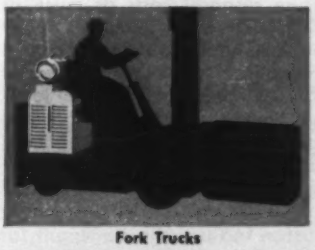
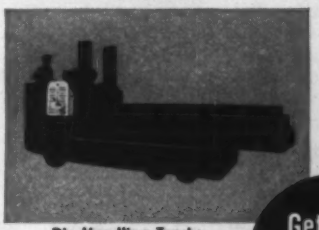

Fork Trucks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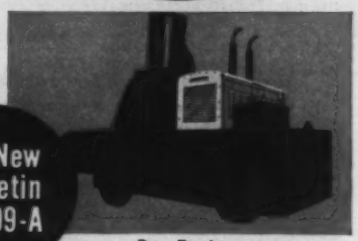
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on a national security basis. Cases in point: Some time ago, the Tariff Commission declined to consider an investigation of fencing and nail imports. But another agency, the Treasury Department, last month started an investigation of Japanese steel imports under the Antidumping Act. The probe involves reinforcing bars, merchant bars, plates, hot rolled sheets, galvanized sheets, angles, beams, and channels. Several bills for reducing imports have been placed in the Congressional hopper, but they're mostly political gimmicks.

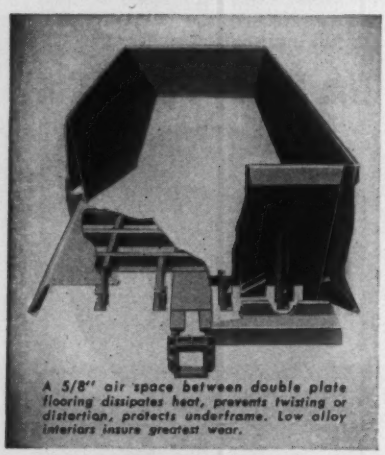
● **Not much help is expected from Congress.**

U. S. steelmen will have to depend pretty much upon their own resourcefulness. They'll certainly have to develop a greater awareness of foreign trade. They'll have to consistently offer better products and services. They'll have to keep their costs down. They'll have to offer quality steels at competitive prices.

Finally, they will have to cultivate enlightened steel procurement through stepped-up, constructive sales promotion programs.

MAGOR AIR DUMP CARS

FOR STEEL PLANT SERVICE



A 5/8" air space between double plate flooring dissipates heat, prevents twisting or distortion, protects underframe. Low alloy interiors insure greatest wear.

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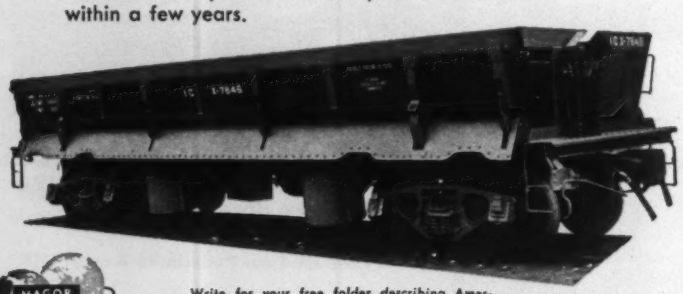
Savings effected by the new Magor Air Dump Cars will write off your entire dump car investment within a few years.



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50 Church Street
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Steel Bars . . .

Bar Prices, Page 111

While most bar producers are sold out through May and anticipate high level operations during the first half of the year, settlement of the steel wage dispute has resulted in some easing in demand.

Shifting of requirements and possibly some order cancellations, especially of duplicated tonnage, are expected. However, most sellers think unplaced business is sufficient to take up any slack that may develop.

The possibility of higher prices resulting from the wage settlement will serve to hold order cancellations to a minimum. Most users are expected to take in every ton they can get before prices go up.

Sheets, Strip . . .

Sheet & Strip Prices, Pages 112 & 113

While it's too early to predict effects of the steel labor settlement on mill orders, sales officials are confident that cancellations or requests for delayed shipments will be few. That's particularly true of sheets and strip. Of all major products, it appears they will be least affected by any general easing in demand pressure.

Right now, demand for sheets exceeds supply. Most mills are sold up for the first half of the year on hot and cold rolled and galvanized. Tight supply extends to sheet specialties and tin plate.

Sheetmakers point out that business prospects are excellent in major consuming industries and that buyers have had little opportunity to rebuild their inventories. Even though some users placed duplicate orders in anticipation of a resumption of the strike, few are likely to risk inadequate supplies by canceling tonnage on order. Most realize cold rolled and galvanized sheets will be on allocation most of the first half.

Indicative of consumers' views, a Pittsburgh area electrical equipment manufacturer thinks delivery problems will continue through the first six months. A buyer for the company says: "Removal of the strike threat minimizes our problems, but we still think sheets will be hard to get until June. About 85 to 90 per cent of the orders we placed are firm."

Another consumer says that while he hasn't been able to increase his inventory since the mills resumed shipments in November, he estimates he could have operated through March on his indicated stockpile as of Jan. 26. This user won't rebuild stocks to prestrike levels (90 days plus), but hopes to get back to normal (60 to 90 days) by midyear.

Some requests are coming from consumers for changes in specifications to meet revised manufacturing schedules since orders were placed months ago. There may be more of this and even some cancellations as time passes, especially where buyers have placed duplicate orders.

While price stability is anticipated through the first half of the year, no one will be surprised if some advances are effected over the longer term in light of the higher costs resulting from the wage settlement.

Tubular Goods . . .

Tubular Goods Prices, Page 117

Line pipe sales officials of a leading Pittsburgh producing mill are confident that nearly all their tonnage booked is firm even though the strike has been settled. After taking a big order for 6 in. pipe recently, the mill had to extend its delivery promises on new business from March until June.

On oil country tubing and casing, major producers are booked solidly into June. At the same time, demand for standard pipe is holding up surprisingly well in view of the seasonal slump in construction. Distributors are seeking to rebuild their inventories as quickly as possible.

J. L. Mauthe, chairman, Youngstown Sheet & Tube Co., Youngstown, a large pipemaker, says his company has plenty of orders to insure virtual capacity operations for at least six months. Demand for pipe, he says, is not as strong as that for sheets and tin plate, and he attributes the situation to rising foreign competition.

Oil well drilling activity in the week ended Dec. 28 declined sharply from the previous week. The Hughes Tool Co.'s survey shows the number of rotary rigs operating at 1913, down 204 from the week before.

Pacific Gas & Electric Co., San Francisco, hopes to obtain govern-

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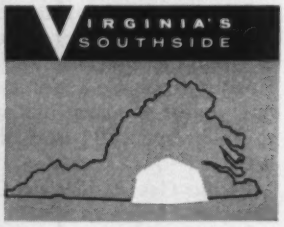

VEPCO **VIRGINIA ELECTRIC and POWER COMPANY**

Clark P. Spellman, Manager—Area Development, Electric Building, Richmond 9, Virginia • MIlton 9-1411

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ment authorizations soon to begin construction of a natural gas pipeline from Canada. It will be 1404 miles long, reaching from Alberta to the San Francisco Bay area.

Distributors . . .

Prices, Page 118

Most distributors look for only mild improvement in bookings this month. At the same time, they predict progress in their efforts to replenish inventories. One large service center in the Philadelphia area, for instance, estimates stocks increased about 5 per cent last month and looks for a further gain this month. Consensus is that it will be several weeks before stocks will attain reasonable balance.

Operators of major steel service centers expect to maintain present price schedules as long as mills make no revisions. Any advance in mill prices will be reflected in distributors' quotations.

Excessive tonnages of potentially cheap foreign steel stockpiled in some areas, particularly in Houston, will continue to hold the market in check at those points.

Plates . . .

Plate Prices, Page 111

Demand for plates is off slightly as a result of the steel wage settlement. However, mill backlogs are substantial, and little sheared plate is being offered for shipment before April. Some makers are booked solidly into May. Exceptions: Stainless clad alloys and certain other specialties which can still be had for delivery in March, despite fairly active demand from utilities, chemical, and petroleum industries.

The pressure for mill shipments is likely to ease now that uninterrupted steel production is assured. Few cancellations or deferments are likely, though, since higher prices are expected eventually, and users will be anxious to rebuild their stocks as quickly as possible. Some duplicate orders may be wiped out, of course, but the chances are good that the tonnage made available will be quickly snapped up. However, one large Pittsburgh area consumer thinks plates will be in such good supply by March there'll be "almost a buyers' market" in April.

One producer can still take June orders for universal plates up to 1 in. thick and 72 in. wide.

Semifinished Steel . . .

Semifinished Prices, Page 111

Based on the 1960 steel ingot capacity rating of 148,570,970 net tons, the national operating rate for steelmakers last week averaged 95 per cent, off ½ point from the preceding week. The new capacity rating is 937,300 net tons over that reported at the start of 1959, and is 62 per cent higher than that at the end of World War II.

High level operations through the first half of this year are assured by the steel wage settlement. Steelmakers are predicting new production records will be established for the year as a whole.

The Lone Star (Tex.) mill is expected to finish shipments of slabs to the Chrysler Corp. this month. The mill operated at capacity during the last six months of last year and set a sales record.

Kaiser Steel Corp., Fontana, Calif., expects to pour 2.5 million ingot tons of steel this year, 900,000 more than the company's pervious record, set in 1956.

Structural Shapes . . .

Structural Shape Prices, Page 111

With the steel wage dispute out of the way, structural fabricators anticipate early improvement in construction. They think that builders can count upon an uninterrupted supply of steel and be able to more accurately estimate costs.

Fabricators look for higher steel prices. It's not thought that advances will kill off much new business. Further, seasonal influences should prove a stimulating factor in demand as the year advances.

Generally, fabricators say it'll be at least two months before they'll be able to get inventories in reasonable balance. Meanwhile, leading shape producers are quoting 17 to 21 week delivery on wide flange sections and 9 to 12 weeks on standard shapes. Little, if any, plate tonnage is available for delivery before April.

Structural steel awards of 260,190 tons in November represented an increase of 7 per cent over the previous month, reports the American Institute of Steel Construction. They were also better than they were in the same month of 1958, when 243,000 tons were placed.

Total bookings for the first 11 months of last year were 2,856,733 tons, 11 per cent greater than in the corresponding period of 1958.

Shipments in November totaled 180,772 tons, bringing the total for the first 11 months to 2,668,721 tons, 21 per cent below shipments in the like 1958 period.

Order backlogs as of Nov. 30 totaled 2,067,571 tons. Of that amount, 1,162,430 tons were scheduled for fabrication during the four months ending Mar. 31.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

14,000 tons, superstructure, Damen Avenue viaduct, 37th to 47th Streets, Chicago, to Bethlehem Steel Co., Bethlehem, Pa.

2980 tons, state highway bridge, Clinch River, Roane County, Tennessee, to American Bridge Div., U. S. Steel Corp., Pittsburgh; Maxon Construction Co., Dayton, Ohio, general contractor.

2960 tons, six state highway bridges, Lynnfield-Peabody, Mass., to Standard Structural Steel Co., Hartford, Conn.; Berke-Moore Co. Inc., Boston, general contractor.

2820 tons, Morgan Street viaducts (two) and ramps, Hartford, Conn., to City Iron Works, Wethersfield, Conn.; Savin Bros. Inc., Bloomfield, Conn., general contractor.

2300 tons, building, St. John's Riverside Hospital, Yonkers, N. Y., to Grand Iron Works, New York.

2110 tons, buildings, Atlas Terminals Inc., Los Angeles, to the Bethlehem Steel Co., Bethlehem, Pa.

2065 tons, railroad grade crossing elimination, Nassau County, Long Island, New York, through Hendricks Bros., general contractor, to Harris Structural Steel Co., New York.

1640 tons, building, Wyeth Laboratories, East Whiteland Township, Pa., through George A. Fuller Co., to Bethlehem Steel Co., Bethlehem, Pa.

1400 tons, nylon yarn plant, Chemstrand Corp., Greenwood, S. C., to Southern Engineering Co., Charlotte, N. C.; Daniel Construction Co. Inc., Greenville, general contractor; 300 tons, reinforcing bars, to Steel Fabricators, Gastonia, N. C.

1300 tons, eight highway structures, Chelmsford-Lowell, Mass., to Harris Structural Steel Co., New York; Campanella & Cardi Construction Co. Inc., Hillsgrove, R. I., general contractors; 756 tons, concrete bars to Northern Steel Inc., Boston.

1385 tons, federal office building, Richmond, Va., to Virginia Steel Co., Richmond; Wise Construction Co., Richmond, general contractor.

1145 tons, eight state highway bridges (34-103 and 105) Danbury, Conn., to Standard Structural Steel Co., Hartford, Conn.; Oneglia & Gervasini Inc., Torrington, Conn., general contractor.

1000 tons, structurals and reinforcing bars, veterans' hospital and regional office, Jackson, Miss., to Orleans Materials & Equipment Co., New Orleans (structurals), and Contractor's Materials Co., Jackson (reinforcing); J. A. Jones Construction Co., Nashville, Tenn., general contractor.

1000 tons, building, J. J. Newberry, Woodside, Long Island, N. Y., to the Grand Iron Works, New York.

900 tons, state bridgework, Suffolk County, New York, through Hendrickson Bros., general contractor, to Ingalls Iron Works, Birmingham.

900 tons, Bayview Manor Home, Seattle, to Northwest Steel Rolling Mills Inc., Seattle; Cawdrey & Vemo, Seattle, general contractor.

800 tons, New Jersey approach, George Wash-

ington Bridge, New York, through Rusciano & De Balso, general contractors, to J. K. Welding Inc., New York.

800 tons, three state bridges, Littleton, Mass., to American Bridge Div., U. S. Steel Corp., Pittsburgh; Bayer & Mingolla Construction Co. Inc., Worcester, Mass., general contractor; 400 tons, reinforcing bars, to Northern Steel Inc., Boston.

600 tons, state highway bridges, Shelby County, Indiana, to Central States Steel Co., Indianapolis; J. S. Sweet Co. Inc., Cambridge City, Ind., general contractor.

650 tons, buildings, St. Anselm's College, Manchester, N. H., to Bethlehem Steel Co., Bethlehem, Pa.; Perini Corp., Framingham, Mass., general contractor; 120 tons, reinforcing bars, to Northern Steel Inc., Boston.

623 tons, state highway bridges, contract 4728, Wayne County, Indiana, to Bethlehem Steel Co., Bethlehem, Pa.; DeBolt Construction Co. Inc., Richmond, Ind., general contractor.

625 tons, Peer Park High School, Babylon, N. Y., to Bethlehem Fabricators, Bethlehem, Pa.

620 tons, two 4-span composite wide flange beam bridges, contract No. 2, Putney, Vt., to Bethlehem Steel Co., Bethlehem, Pa.; Perini Corp., Framingham, Mass., general contractor.

590 tons, Public School 55, New York, through Caristo Construction Co., general contractor, to Bethlehem Fabricators, Bethlehem, Pa.

500 tons (estimated) research and development center, Foote Mineral Co., Exton, Pa., to Frank M. Weaver Inc., Lansdale, Pa.; Wark & Co., Philadelphia, general contractor.

500 tons, factory building, Rentar Mfg. Co., Union Turnpike, Queens, N. Y., to Grand Iron Works, New York.

475 tons, Baxter warehouse and office, Union, N. J., to Bergen Point Iron Works, Bayonne, N. J.

450 tons, structurals and bars, business administration building, and library, University of Hartford, Hartford, Conn., to Haarmann Steel Co., Holyoke, Mass. (structurals), and Scherer Steel Co., Hartford (reinforcing); A. F. Peaslee Inc., Hartford, general contractor.

425 tons, four state highway bridges, Westford, Mass., to Bethlehem Steel Co., Bethlehem, Pa.; Suburban Excavators Inc., Wakefield, Mass., general contractor.

400 tons, junior-senior high school, Millis, Mass., to Builders Iron Works, Somerville, Mass.; Park Construction Co. Inc., Boston, general contractor.

400 tons, office and warehouse, Grand Union Co., Landover, Md., through the Sardoni Co., Wilkes Barre, Pa., general contractor, to Bethlehem Steel Co., Bethlehem, Pa.

390 tons, St. Francis Hospital, Wilmington, Del., through William A. Berbusse Inc., general contractor, to Budd Metal Co., Wilmington.

240 tons, bridgework, Burlington County Bridge Commission, Palmyra, N. J., through Harbor Construction Corp., general contractor, to American Bridge Div., U. S. Steel Corp., Pittsburgh.

240 tons, nurses' residence, New York, through Kolmar Construction Co., to Schacht Steel Construction Inc., New York.

330 tons, three state highway bridges, Chelmsford, Mass., to West End Iron Works, Cambridge, Mass.; Wes-Julian Construction Co., Dedham, Mass., general contractor.

350 tons, reinforcing and structurals, Mercy High School for Girls, Baltimore, to Bethlehem Steel Co., Bethlehem, Pa. (reinforcing) and Maryland Steel Products Co. Inc., Baltimore (structurals); Consolidated Engineering Co., Baltimore, general contractor.

300 tons, Chinese Community Center, Mott St., New York, to Grand Iron Works, New York.

300 tons, six story apartment, Marshall Ave. and 259th St., Bronx, N. Y., to Grand Iron Works, New York.

295 tons, Minuteman facilities, Complexes 31 and 32, Patrick AFB, Florida, to Master Fabricators Inc., Atlanta; George A. Fuller Co., Atlanta, general contractor.

290 tons, two 4-span composite wide flange beam bridges, Brattleboro-Dummerston, Vt., to City Iron Works, Wethersfield, Conn.; Perini Corp., Framington, Mass., general contractor.

STRUCTURAL STEEL PENDING

4000 tons, Manhattan bridge improvement, contract 10, Department of Public Works, New York.

4000 tons, superstructure, welded girder bridge, two levels, Route 495, Merrimack River, North Andover-Lawrence, Mass.

3000 tons, 22-story office building, Diesel Construction Co., Third Ave. and 46th St., New York.

2200 tons, auditorium, Prudential Center, Boston; bids on the general contract rejected; to be re-estimated.

2000 tons, Police Academy, Department of Public Works, 20th St. and Third Ave., New York; bids Jan. 27.

795 tons, bridgework, FAWOBE 59-1, Nassau County, New York, Rappone Construction Co., Long Island, N. Y., low on the general contract.

527 tons, five state highway bridges, Waterbury-Cheshire, Conn.; bids Jan. 11, Hartford, Conn.; also 50 tons of steel piles.

400 tons, Childrens' Court Building, East Meadow, Long Island, N. Y., John T. Brady, New York, low bidder.

350 tons, state bridgework, Camden and Burlington counties, New Jersey; bids Jan. 20; 135 tons of reinforcing bars also required.

327 tons, bridgework, FARC 59-166, Saratoga County, New York, Collins Bros., Mechanicsville, N. Y., low on the general contract.

310 tons, state highway bridges, Reading-Wakefield, Mass.; bids Jan. 12 to Boston.

256 tons, two-span rolled beam bridge, Cheshire-Southington, Conn.; bids Jan. 11 to Hartford, Conn.

210 tons, state bridgework, Union County, New Jersey; bids Jan. 20.

183 tons, state bridgework, FAC 59-20, Montgomery County, New York, E. A. Collins, Mechanicsville, New York, low on the general contract.

PLATES . . .

PLATES PLACED

223 tons, General Stores Supply Office, Navy, Philadelphia, to Caine Steel Co., Chicago; also, 248 tons of steel strapping, to Stanley Works, New Britain, Conn.

110 tons, sewage work extension, comprising tank construction, Day Park, N. Y., through Newman Co., general contractor, to Chicago Bridge & Iron Co., Chicago.

PLATES PENDING

720 tons, three fuel oil tanks, Long Island Lighting Co., Port Jefferson and Island Park, Long Island, N. Y.

150 tons, elevated 500,000 gallon watertank, Ft. Riley, Kans.; bids Jan. 28 to the U. S. Engineer, Kansas City, Mo.

Unstated, steel water reservoir, 300,000 gallon capacity; bids to Snohomish County PUD No. 1, Everett, Wash., Jan. 11.

REINFORCING BARS . . .

REINFORCING BARS PLACED

Unstated, Western Farmers' Association, $1.5 million feed mill, Portland, Oreg.; subaward to Mercer Steel Co., Portland.

REINFORCING BARS PENDING

725 tons, including 400 tons of mat reinforcement, state highway structures and pavement, Waterbury-Cheshire, Conn.; bids Jan. 11 to Hartford, Conn.

500 tons or more, Tacoma, Wash., baseball stadium; general contract to Cheney Lumber Co., Tacoma, bidders' design, by Tacoma City Council, at $616,200.

220 tons, state highway structures, Reading-Wakefield, Mass.; bids Jan. 12 to Boston.

185 tons, including 85 tons of mat reinforcement, state highway structures and pavement, Cheshire-Southington, Conn.; bids Jan. 11 to Hartford, Conn.

100 tons or more, footings for elevated steel watertank, Renton, Wash.; general contract to G. R. Leischner, Seattle, at $45,987.

DISTRICT INGOT RATES

(Percentage of capacity engaged)

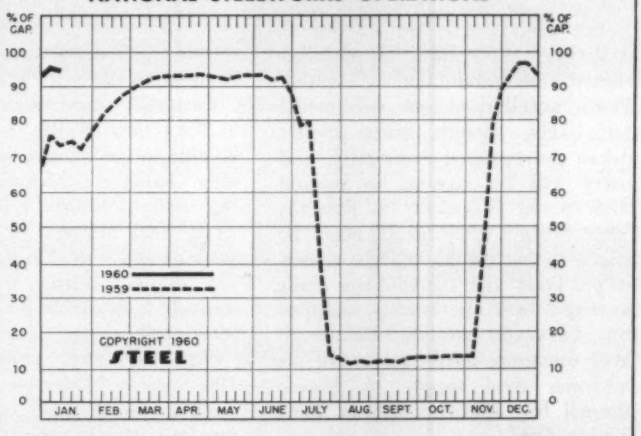
	Week Ended Jan. 10	Change	Same Week 1959	1958
Pittsburgh	97	0*	75	54.5
Chicago	95.5	+ 1*	80	64
Eastern	97	+ 1	74	77
Youngstown	99	0	65	61
Wheeling	94	— 1.5	84	55.5
Cleveland	99	0*	81	48.5
Buffalo	107.5	0	66	53.5
Birmingham	93.5	+ 4	70.5	62.5
Cincinnati	99	— 4*	82	61.5
St. Louis	91.5	— 6*	96.5	86
Detroit	101.5	+ 0.5*	95	66.5
Western	90	— 3.5	74	79
National Rate	95	‡	73.6	56.1

INGOT PRODUCTION

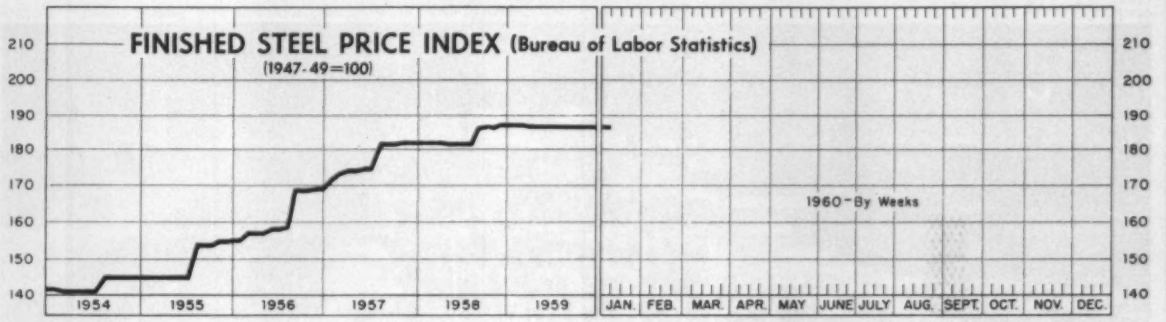
	Week Ended Jan. 10	Week Ago	Month Ago	Year Ago
INDEX (1947-49=100)	168.5†	169.7	170.1	129.8
NET TONS (In thousands)	2,707†	2,726	2,732	2,085

*Change from preceding week's revised rate.
†Estimated by STEEL; comparative figures reported by AISI.
‡Start of new series based on 1960 capacity. Weekly capacity (net tons): 2,849,474 in 1960; 2,831,331 in 1959; 2,699,173 in 1958.

NATIONAL STEELWORKS OPERATIONS



Price Indexes and Composites



Jan. 5, 1960	Week Ago	Month Ago	Dec. Index	Year Ago
186.8	186.8	186.8	186.8	186.9

AVERAGE PRICES OF STEEL (Bureau of Labor Statistics)

Week Ended Jan. 5

Prices include mill base prices and typical extras and deductions. Units are 100 lb except where otherwise noted in parentheses. For complete description of the following products and extras and deductions applicable to them, write to STEEL.

Rails, Standard No. 1	$5.825
Rails, Light, 40 lb	7.292
Tie Plates	6.875
Axles, Railway	10.175
Wheels, Freight Car, 33 in. (per wheel)	62.000
Plates, Carbon	6.350
Structural Shapes	6.167
Bars, Tool Steel, Carbon (lb)	0.560
Bars, Tool Steel, Alloy, Oil Hardening Die (lb)	0.680
Bars, Tool Steel, H.R. Alloy, High Speed, W 6.75, Cr 4.5, V 2.1, Mo 5.5, C 0.060 (lb)	1.400
Bars, Tool Steel, H.R. Alloy, High Speed, W18, Cr 4, V 1 (lb)	1.895
Bars, H.R., Alloy	10.775
Bars, H.R., Stainless, 303 (lb)	0.543
Bars, H.R., Carbon	6.675
Bars, Reinforcing	6.385
Bars, C.F., Carbon	10.710
Bars, C.F., Alloy	14.125
Bars, C.F., Stainless, 302 (lb)	0.570
Sheets, H.R., Carbon	6.350
Sheets, C.R., Carbon	7.300
Sheets, Galvanized	8.765
Sheets, C.R., Stainless, 302 (lb)	0.658
Sheets, Electrical	12.625
Strip, C.R., Carbon	9.489
Strip, C.R., Stainless, 430 (lb)	0.480
Strip, H.R., Carbon	6.250
Pipe, Black, Buttweld (100 ft)	19.905
Pipe, Galv., Buttweld (100 ft)	23.585
Pipe, Line (100 ft)	199.533
Casing, Oil Well, Carbon (100 ft)	201.080
Casing, Oil Well, Alloy (100 ft)	315.213
Tubes, Boiler (100 ft)	51.200
Tubing, Mechanical, Carbon (100 ft)	27.005
Tubing, Mechanical, Stainless, 304 (100 ft)	205.608
Tin Plate, Hot-dipped, 1.25 lb (95 lb base box)	10.100
Tin Plate, Electrolytic, 0.25 lb (95 lb base box)	8.800
Black Plate, Canmaking Quality (95 lb base box)	7.900
Wire, Drawn, Carbon	10.575
Wire, Drawn, Stainless, 430 (lb)	0.665
Bale Ties (bundles)	7.967
Nails, Wire, 8d Common	9.825
Wire, Barbed (80-rod spool)	8.758
Woven Wire Fence (20-rod roll)	21.793

STEEL's FINISHED PRICE INDEX*

	Jan. 6 1960	Week Ago	Month Ago	Year Ago	5 Yr Ago
Index (1935-39 avg=100)	247.82	247.82	247.82	247.82	194.53
Index in cents per lb	6.713	6.713	6.713	6.713	5.270

STEEL's ARITHMETICAL PRICE COMPOSITES*

Finished Steel, NT	$149.96	$149.96	$149.96	$149.96	$117.95
No. 2 Fdry. Pig Iron, GT	66.49	66.49	66.49	66.49	56.54
Basic Pig Iron, GT	65.99	65.99	65.99	65.99	56.04
Malleable Pig Iron, GT	67.27	67.27	67.27	67.27	57.27
Steelmaking Scrap, GT	41.33	41.33	42.83	39.67	34.50

*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130.

Comparison of Prices

Comparative prices by districts in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED STEEL	Jan. 6 1960	Week Ago	Month Ago	Year Ago	5 Yr Ago
Bars, H.R., Pittsburgh	5.675	5.675	5.675	5.675	4.30
Bars, H.R., Chicago	5.675	5.675	5.675	5.675	4.30
Bars, H.R., deld., Philadelphia	5.975	5.975	5.975	5.975	4.55
Bars, C.R., Pittsburgh	7.65*	7.65*	7.65*	7.65*	5.40
Shapes, Std., Pittsburgh	5.50	5.50	5.50	5.50	4.25
Shapes, Std., Chicago	5.50	5.50	5.50	5.50	4.25
Shapes, deld., Philadelphia	5.77	5.77	5.77	5.77	4.53
Plates, Pittsburgh	5.30	5.30	5.30	5.30	4.225
Plates, Chicago	5.30	5.30	5.30	5.30	4.225
Plates, Coatesville, Pa.	5.30	5.30	5.30	5.30	4.225
Plates, Sparrows Point, Md.	5.30	5.30	5.30	5.30	4.225
Plates, Claymont, Del.	5.30	5.30	5.30	5.30	4.225
Sheets, H.R., Pittsburgh	5.10	5.10	5.10	5.10	4.05
Sheets, H.R., Chicago	5.10	5.10	5.10	5.10	4.05
Sheets, C.R., Pittsburgh	6.275	6.275	6.275	6.275	4.95
Sheets, C.R., Chicago	6.275	6.275	6.275	6.275	4.95
Sheets, C.R., Detroit	6.275	6.275	6.275	6.275	5.10
Sheets, Galv., Pittsburgh	6.875	6.875	6.875	6.875	5.45
Strip, H.R., Pittsburgh	5.10	5.10	5.10	5.10	4.05
Strip, H.R., Chicago	5.10	5.10	5.10	5.10	4.05
Strip, C.R., Pittsburgh	7.425	7.425	7.425	7.425	5.75
Strip, C.R., Chicago	7.425	7.425	7.425	7.425	5.85
Strip, C.R., Detroit	7.425	7.425	7.425	7.425	5.90
Wire, Basic, Pittsburgh	8.00	8.00	8.00	8.00	5.75
Nails, Wire, Pittsburgh	8.95	8.95	8.95	8.95	6.85
Tin plate (1.50 lb) box, Pitts.	$10.65	$10.65	$10.65	$10.65	$9.05

*Including 0.35c for special quality.

SEMIFINISHED STEEL					
Billets, forging, Pitts. (NT)	$99.50	$99.50	$99.50	$99.50	$78.00
Wire rods, 1/2-9/16" Pitts.	6.40	6.40	6.40	6.40	4.675

PIG IRON, Gross Ton	Jan. 6 1960	Week Ago	Month Ago	Year Ago	5 Yr Ago
Bessemer, Pittsburgh	$67.00	$67.00	$67.00	$67.00	$57.00
Basic, Valley	66.00	66.00	66.00	66.00	56.00
Basic, deld., Philadelphia	70.41	70.41	70.41	70.41	59.66
No. 2 Fdry, Neville Island, Pa.	66.50	66.50	66.50	66.50	56.50
No. 2 Fdry, Chicago	66.50	66.50	66.50	66.50	56.50
No. 2 Fdry, deld., Phila.	70.91	70.91	70.91	70.91	55.16
No. 2 Fdry, Birmingham	62.50	62.50	62.50	62.50	52.88
No. 2 Fdry (Birm.) deld., Cin.	70.20	70.20	70.20	70.20	60.58
Malleable, Valley	66.50	66.50	66.50	66.50	56.50
Malleable, Chicago	66.50	66.50	66.50	66.50	56.50
Ferromanganese, net ton†	245.00	245.00	245.00	245.00	190.00

†74-76% Mn, Duquesne, Pa.

SCRAP, Gross Ton (including broker's commission)					
No. 1 Heavy Melt, Pittsburgh	$41.50	$41.50	$41.50	$42.50	$36.50
No. 1 Heavy Melt, E. Pa.	42.00	42.00	45.00	34.00	32.00
No. 1 Heavy Melt, Chicago	40.50	40.50	42.00	42.50	35.00
No. 1 Heavy Melt, Valley	44.50	43.50	43.50	43.50	34.50
No. 1 Heavy Melt, Cleve.	41.50	40.50	40.50	39.50	33.00
No. 1 Heavy Melt, Buffalo	37.50	37.50	33.50	35.50	30.50
Rails, Rerolling, Chicago	61.50	61.50	61.50	62.50	53.00
No. 1 Cast, Chicago	54.50	54.50	54.50	45.50	40.00

COKE, Net Ton					
Beehive, Furn., Connlsvl.	$15.00	$15.00	$15.00	$15.25	$13.75
Beehive, Fdry., Connlsvl.	18.25	18.25	18.25	18.25	16.75
Oven, Fdry., Milwaukee	32.00	32.00	32.00	30.50	25.25

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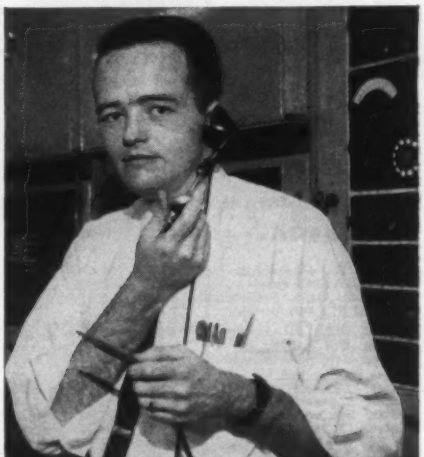

CORNELIUS J. MANNING, skilled technician in one of America's communication centers, is typical of many thousands of payroll savers in industry and business who are buying U. S. Savings Bonds regularly.

STEEL
The Metalworking Weekly

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Steel Prices

Mill prices as reported to STEEL, Jan. 6, cents per pound except as otherwise noted. *Changes shown in italics.* Code number following mill point indicates producing company. Key to producers page 112; footnotes, page 114.

SEMIFINISHED

INGOTS, Carbon, Forging (NT)

Munhall,Pa. U5 .....$76.00

INGOTS, Alloy (NT)

Detroit S41 .....$82.00
Economy,Pa. B14 ....82.00
Farrell,Pa. S3 .....82.00
Lowellville,O. S3 ....82.00
Midland,Pa. C18 ....82.00
Munhall,Pa. U5 .....82.00
Sharon,Pa. S3 .....82.00

BILLETS, BLOOMS & SLABS Carbon, Rerolling (NT)

Bartonville,Ill. K4 ...$82.00
Bessemer,Pa. U5 ....80.00
Buffalo R2 .....80.00
Clairton,Pa. U5 .....80.00
Ensley,Ala. T2 .....80.00
Fairfield,Ala. T2 ....80.00
Fontana,Calif. K1 ....90.50
Gary,Ind. U5 .....80.00
Johnstown,Pa. B2 ....80.00
Lackawanna,N.Y. B2 .80.00
Munhall,Pa. U5 .....80.00
Owensboro,Ky. G8 ....80.00
S.Chicago,Ill. R2, U5 ..80.00
S.Duquesne,Pa. U5 ...80.00
Sterling,Ill. N15 .....80.00
Youngstown R2 .....80.00

Carbon, Forging (NT)

Bessemer,Pa. U5 ....$99.50
Buffalo R2 .....99.50
Canton,O. R2 .....102.00
Clairton,Pa. U5 .....99.50
Conshohocken,Pa. A3 .104.50
Ensley,Ala. T2 .....99.50
Fairfield,Ala. T2 ....99.50
Farrell,Pa. S3 .....99.50
Fontana,Calif. K1 ...109.00
Gary,Ind. U5 .....99.50
Geneva, Utah C11 ....99.50
Houston S5 .....104.50
Johnstown,Pa. B2 ....99.50
Lackawanna,N.Y. B2..99.50
LosAngeles B3 .....109.00
Midland,Pa. C18 .....99.50
Munhall,Pa. U5 .....99.50
Owensboro,Ky. G8 ....99.50
Seattle B3 .....109.00
Sharon,Pa. S3 .....99.50
S.Chicago R2, U5, W14 99.50
S.Duquesne,Pa. U5 ....99.50
S.SanFrancisco B3 ...109.00
Warren O C17 .....99.50

Alloy, Forging (NT)

Bethlehem,Pa. B2 ..$119.00
Bridgeport,Conn. C32 119.00
Buffalo R2 .....119.00
Canton,O. R2, T7 ....119.00
Conshohocken,Pa. A3..126.00
Detroit S41 .....119.00
Economy,Pa. B14 .....119.00
Farrell,Pa. S3 .....119.00
Fontana,Calif. K1 ....140.00
Gary,Ind. U5 .....119.00
Houston S5 .....124 00
Ind.Harbor,Ind. Y1 ...119.00
Johnstown,Pa. B2 ....119.00
Lackawanna,N.Y. B2..119.00
LosAngeles B3 .....139.00
Lowellville,O. S3 ....119.00
Massillon,O. R2 .....119.00
Midland Pa. C18 ....119.00
Munhall,Pa. U5 .....119.00
Owensboro,Ky. G8 ....119.00
Sharon,Pa. S3 .....119.00
S.Chicago R2,U5,W14 119.00
S.Duquesne,Pa. U5 ...119.00
Struthers,O. Y1 .....119.00
Warren,O. C17 .....119.00

ROUNDS, SEAMLESS TUBE (NT)

Buffalo R2 .....$122.50
Canton,O. R2 .....125.00
Cleveland R2 .....122.50
Gary,Ind. U5 .....122.50
S.Chicago,Ill. R2, W14 122.50
S.Duquesne,Pa. U5 ..122.50
Warren,O. C17 .....122.50

SKELP

Aliquippa,Pa. J5 .....5.05
Munhall,Pa. U5 .....5.05
Pittsburgh J5 .....5.05
Warren,O. R2 .....5.05
Youngstown R2, U5 ....5.05

WIRE RODS

AlabamaCity, Ala. R2 ..6.40
Aliquippa,Pa. J5 .....6.40
Alton,Ill. L1 .....6.60
Bartonville,Ill. K4 ....6.50
Buffalo W12 .....6.40
Cleveland A7 .....6.40
Donora,Pa. A7 .....6.40
Fairfield,Ala. T2 .....6.40
Houston S5 .....6.65
IndianaHarbor,Ind. Y1..6.40
Johnstown,Pa. B2 ....6.40
Joliet,Ill. A7 .....6.40
KansasCity,Mo. S5 ....6.65
Kokomo,Ind. C16 .....6.50
LosAngeles B3 .....7.20
Minnequa,Colo. C10 ....6.65
Monessen,Pa. P7 .....6.40
Pittsburg,Calif. C11 ...7.20
Portsmouth,O. P12 ....6.40
Roebling,N.J. R5 .....6.50
S.Chicago,Ill. R2, W14..6.40
SparrowsPoint,Md. B2..6.50
Sterling,Ill.(1) N15 ....6.40
Sterling,Ill. N15 .....6.50
Struthers,O. Y1 .....6.40
Worcester,Mass. A7 ....6.70

STRUCTURALS

Carbon Steel Std. Shapes

AlabamaCity,Ala. R2 ..5.50
Aliquippa,Pa. J5 .....5.50
Atlanta A11 .....5.70
Bessemer,Ala. T2 .....5.50
Bethlehem,Pa. B2 .....5.55
Birmingham C15 .....5.50
Clairton,Pa. U5 .....5.50
Fairfield,Ala. T2 .....5.50
Fontana,Calif. K1 .....6.30
Gary,Ind. U5 .....5.50
Geneva,Utah C11 .....5.50
Houston S5 .....5.60
Ind.Harbor,Ind. I-2, Y1.5.50
Johnstown,Pa. B2 .....5.55
Joliet,Ill. P22 .....5.50
KansasCity,Mo. S5 .....5.60
Lackawanna,N.Y. B2 ..5.55
Los Angeles B3 .....6.20
Minnequa,Colo. C10 ....5.80
Munhall,Pa. U5 .....5.50
Niles,Calif. P1 .....6.25
Phoenixville,Pa. P4 ....5.55
Portland,Oreg. O4 ....6.25
Seattle B3 .....6.25
S.Chicago,Ill. U5, W14..5.50
S.SanFrancisco B3 .....6.15
Sterling,Ill. N15 .....5.50
Torrance,Calif. C11 ....6.20
Weirton,W.Va. W6 .....5.50

Wide Flange

Bethlehem Pa. B2 .....5.55
Clairton,Pa. U5 .....5.50
Fontana,Calif. K1 .....6.45
IndianaHarbor,Ind. I-2..5.50
Lackawanna,N.Y. B2 ..5.55
Munhall,Pa. U5 .....5.50
Phoenixville,Pa. P4 ....5.55
S.Chicago,Ill. U5 .....5.50
Sterling,Ill. N15 .....5.50
Weirton,W.Va. W16 ....5.50

Alloy Std. Shapes

Aliquippa,Pa. J5 .....6.80
Clairton,Pa. U5 .....6.80
Gary,Ind. U5 .....6.80
Houston S5 .....6.90
Munhall,Pa. U5 .....6.80
S.Chicago,Ill. U5, W14..6.80

H.S., L.A., Std. Shapes

Aliquippa,Pa. J5 .....8.05
Bessemer,Ala. T2 .....8.05
Bethlehem,Pa. B2 .....8.10
Clairton,Pa. U5 .....8.05
Fairfield,Ala. T2 .....8.05
Fontana,Calif. K1 .....8.85
Gary,Ind. U5 .....8.05
Geneva,Utah C11 .....8.05
Houston S5 .....8.15
Ind.Harbor,Ind. I-2, Y1.8.05
Johnstown,Pa. B2 .....8.10
KansasCity,Mo. S5 .....8.15
Lackawanna,N.Y. B2 ..8.10
LosAngeles B3 .....8.75
Munhall,Pa. U5 .....8.05
Seattle B3 .....8.80
S.Chicago,Ill. U5, W14..8.05
S.SanFrancisco B3 .....8.70
Sterling Ill. N15 .....7.75
Struthers,O. Y1 .....8.05

H.S., L.A., Wide Flange

Bethlehem,Pa. B2 .....8.10
Ind.Harbor,Ind. I-2 ..8.05
Lackawanna,N.Y. B2 ..8.10
Munhall,Pa. U5 .....8.05
S.Chicago,Ill. U5 .....8.05
Sterling,Ill. N15 .....7.75

PILING

BEARING PILES

Bethlehem,Pa. B2 .....5.55
Ind.Harbor,Ind. I-2 ....5.50
Lackawanna,N.Y. B2 ...5.55
Munhall,Pa. U5 .....5.50
S.Chicago,Ill. I-2, U5 ..5.50

STEEL SHEET PILING

Ind.Harbor,Ind. I-2 ....6.50
Lackawanna,N.Y. B2 ...6.50
Munhall Pa. U5 .....6.50
S Chicago,Ill. I-2, U5 ..6.50
Weirton,W.Va. W6 .....6.50

PLATES

PLATES, Carbon Steel

AlabamaCity,Ala. R2 ..5.30
Aliquippa,Pa. J5 .....5.30
Ashland,Ky.(15) A10 ..5.30
Atlanta A11 .....5.50
Bessemer,Ala. T2 .....5.30
Clairton,Pa. U5 .....5.30
Claymont,Del. C22 .....5.30
Cleveland J5, R2 .....5.30
Coatesville,Pa. L7 .....5.30
Conshohocken,Pa. A3 ..5.30
Ecorse,Mich. G5 .....5.30
Fairfield,Ala. T2 .....5.30
Farrell,Pa. S3 .....5.30
Fontana,Calif.(30) K1 ..6.10
Gary,Ind. U5 .....5.30
Geneva,Utah C11 .....5.30
GraniteCity,Ill. G4 ....5.40
Harrisburg,Pa. P4 .....5.30
Houston S5 .....5.40
Ind.Harbor,Ind. I-2, Y1.5.30
Johnstown,Pa. B2 .....5.30
Lackawanna,N.Y. B2 ..5.30
Mansfield,O. E6 .....5.30
Minnequa,Colo. C10 ....6.15
Munhall,Pa. U5 .....5.30
Newport,Ky. A2 .....5.30
Pittsburgh J5 .....5.30
Riverdale,Ill. A1 .....5.30
Seattle B3 .....6.20
Sharon,Pa. S3 .....5.30
S.Chicago,Ill. U5, W14..5.30
SparrowsPoint,Md. B2 ..5.30
Sterling,Ill. N15 .....5.30
Steubenville,O. W10 ....5.30
Warren,O. R2 .....5.30
Youngstown U5, Y1 ....5.30
Youngstown(27) R2 ....5.30

PLATES, Carbon Abras. Resist.

Claymont,Del. C22 ....7.05
Fontana,Calif. K1 .....7.85
Geneva,Utah C11 .....7.05
Houston S5 .....7.15
Johnstown,Pa. B2 .....7.05
SparrowsPoint,Md. B2 ..7.05

PLATES, Wrought Iron

Economy,Pa. B14 ....13.55

PLATES, H.S., L.A.

Aliquippa,Pa. J5 .....7.95
Ashland,Ky. A10 .....7.95
Bessemer,Ala. T2 .....7.95
Clairton,Pa. U5 .....7.95
Claymont,Del. C22 .....7.95
Cleveland J5, R2 .....7.95
Coatesville,Pa. L7 .....7.95
Conshohocken,Pa. A3 ...7.95
Economy,Pa. B14 .....7.95
Ecorse,Mich. G5 .....7.95
Fairfield,Ala. T2 .....7.95
Farrell,Pa. S3 .....7.95
Fontana,Calif.(30) K1 ..8.75
Gary,Ind. U5 .....7.95
Geneva,Utah C11 .....7.95
Houston S5 .....8.05
Ind Harbor,Ind. I-2, Y1.7.95
Johnstown,Pa. B2 .....7.95
Munhall,Pa. U5 .....7.95
Pittsburgh J5 .....7.95
Seattle B3 .....8.85
Sharon Pa. S3 .....7.95
S.Chicago,Ill. U5, W14..7.95
SparrowsPoint,Md. B2 ..7.95
Warren,O. R2 .....7.95
Youngstown U5, Y1 ....7.95

PLATES, Alloy

Aliquippa,Pa. J5 .....7.50
Claymont,Del. C22 .....7.50
Coatesville,Pa. L7 .....7.50
Economy,Pa. B14 .....7.50
Farrell,Pa. S3 .....7.50
Fontana,Calif. K1 .....8.30
Gary,Ind. U5 .....7.50
Houston S5 .....7.60
Ind.Harbor,Ind. Y1 .....7.50
Johnstown,Pa. B2 .....7.50
Lowellville,O. S3 .....7.50
Munhall Pa. U5 .....7.50
Newport,Ky. A2 .....7.50
Pittsburgh J5 .....7.50
Seattle B3 .....8.40
Sharon,Pa. S3 .....7.50
S.Chicago Ill. U5, W14..7.50
SparrowsPoint,Md. B2 ..7.50
Youngstown Y1 .....7.50

FLOOR PLATES

Cleveland J5 .....6.375
Conshohocken,Pa. A3 .6.375
Ind.Harbor,Ind. I-2 ..6.375
Munhall,Pa. U5 .....6.375
Pittsburgh J5 .....6.375
S.Chicago,Ill. U5 .....6.375

PLATES, Ingot Iron

Ashland c.l. (15) A10 ..5.55
Ashland l.c.l. (15) A10 .6.05
Cleveland c.l. R2 .....6.05
Warren,O. c.l. R2 .....6.05

BARS

BARS, Hot-Rolled Carbon (Merchant Quality)

Ala.City,Ala.(9) R2 ..5.675
Aliquippa,Pa. (9) J5 ..5.675
Alton,Ill. L1 .....5.875
Atlanta(9) A11 .....5.875
Bessemer,Ala.(9) T2 ...5.675
Birmingham(9) C15 ...5.675
Buffalo(9) R2 .....5.675
Canton,O.(23) R2 .....6.15
Clairton,Pa. (9) U5 ..5.675
Cleveland(9) R2 .....5.675
Ecorse,Mich.(9) G5 ...5.675
Emeryville,Calif. J7 ..6.425
Fairfield,Ala.(9) T2 ..5.675
Fairless,Pa.(9) U5 ....5.825
Fontana,Calif.(9) K1..6.375
Gary,Ind.(9) U5 .....5.675
Houston(9) S5 .....5.925
Ind.Harbor(9) I-2, Y1 5.675
Johnstown,Pa.(9) B2 ..5.675
Joliet,Ill. P2 .....5.675
KansasCity,Mo.(9) S5..5.925
Lackawanna(9) B2 ....5.675
LosAngeles(9) B3 ....6.375
Massillon,O.(23) R2 ....6.15
Midland,Pa.(23) C18 ..6.025
Milton,Pa. M18 .....5.825
Minnequa,Colo. C10 ...6.125
Niles Calif. P1 .....6.375
Owensboro,Ky.(9) G8..6.025
Pittsburg,Calif.(9) C11.6.375
Pittsburgh(9) J5 .....5.675
Portland,Oreg. O4 ....6.425
Riverdale,Ill.(9) A1 ..5.675
Seattle A24, B3, N14..6.425
S.Ch'c'go(9)R2,U5,W14 5.675
S.Duquesne,Pa.(9) U5..5.675
S.SanFran.,Calif.(9)B3 6.425
Sterling,Ill.(1)(9) N15..5.675
Sterling,Ill.(9) N15 ...5.775
Struthers,O.(9) Y1 ....5.675
Tonawanda,N.Y. B12 ..5.675
Torrance Calif.(9) C11 .6.375
Warren,O. C17 .....6.052
Youngstown(9) R2,U5..5.675

BARS, Hot-Rolled Alloy

Aliquippa,Pa. J5 .....6.725
Bethlehem,Pa. B2 .....6.725
Bridgeport,Conn. C32 ..6.80
Buffalo R2 .....6.725
Canton,O. R2, T7 .....6.725
Clairton,Pa. U5 .....6.275
Detroit S41 .....6.725
Economy,Pa. B14 .....6.725
Ecorse,Mich. G5 .....6.725
Fairless,Pa. U5 .....6.875
Farrell,Pa. S3 .....6.725
Fontana,Calif. K1 .....7.775
Gary Ind. U5 .....6.725
Houston S5 .....6.975
Ind.Harbor,Ind. I-2, Y1 6.725
Johnstown,Pa. B2 .....6.725
KansasCity,Mo. S5 ....6.975
Lackawanna,N.Y. B2 ..6.725
LosAngeles B3 .....7.775
Lowellville,O. S3 .....6.725
Massillon,O. R2 .....6.725
Midland,Pa. C18 .....6.725
Owensboro,Ky. G8 .....6.725
Pittsburgh J5 .....6.725
Sharon,Pa. S3 .....6.725
S.Chicago R2, U5, W14 6.725
S.Duquesne,Pa. U5 ....6.725
Struthers,O. Y1 .....6.725
Warren,O. C17 .....6.725
Youngstown U5 .....6.725

BARS & SMALL SHAPES, H.R. High-Strength, Low-Alloy

Aliquippa,Pa. J5 .....8.30
Bessemer,Ala. T2 .....8.30
Bethlehem,Pa. B2 .....8.30
Clairton,Pa. U5 .....8.30
Cleveland R2 .....8.30
Ecorse,Mich. G5 .....8.30
Fairfield,Ala. T2 .....8.30
Fontana,Calif. K1 .....9.00
Gary,Ind. U5 .....8.30
Houston S5 .....8.55
Ind.Harbor,Ind. Y1 .....8.30
Johnstown,Pa. B2 .....8.30
KansasCity,Mo. S5 .....8.55
Lackawanna,N.Y. R2 ..8.30
LosAngeles B3 .....9.00
Pittsburgh J5 .....8.30
Seattle B3 .....9.05
S.Chicago,Ill. R2, W14.8.30
S.Duquesne,Pa. U5 ....8.30
S.SanFrancisco B3 ....9.05
Struthers,O. Y1 .....8.30
Youngstown U5 .....8.30

BAR SIZE ANGLE; H.R. Carbon

Bethlehem Pa.(9) B2 ..5.825
Houston(9) S5 .....5.925
KansasCity,Mo.(9)S5 ..5.925
Lackawanna(9) B2 ....5.675
Sterling,Ill. N15 .....5.775
Sterling,Ill.(1) N15...5.675
Tonawanda,N.Y. B12 ..5.675

BAR SIZE ANGLES; S. Shapes

Aliquippa,Pa. J5 .....5.675
Atlanta A11 .....5.875
Joliet,Ill. P22 .....5.675
Minnequa,Colo. C10 ...6.125
Niles,Calif. P1 .....6.375
Pittsburgh J5 .....5.675
Portland,Oreg. O4 ....6.425
SanFrancisco S7 .....6.52
Seattle B3 .....6.425

BAR SHAPES, Hot-Rolled Alloy

Aliquippa,Pa. J5 .....6.80
Clairton,Pa. U5 .....6.80
Gary,Ind. U5 .....6.80
Houston S5 .....7.05
KansasCity,Mo. S5 ....7.05
Pittsburgh J5 .....6.80
Youngstown U5 .....6.80

BARS, C.F. Loaded (Including loaded extra)

Carbon

LosAngeles P2, S30 ..11.75*

Alloy

Ambridge,Pa. W18 ..10.175
BeaverFalls,Pa. M12..10.175
Camden,N.J. P13 ....10.35
Chicago W18 .....10.175
Elyria,O. W8 .....10.175
Monaca,Pa. S17 .....10.175
Newark,N.J. W18 ....10.35
SpringCity,Pa. K3 ....10.35

*Grade A; add 0.05c for Grade B.

BARS, Cold-Finished Carbon

Ambridge,Pa. W18 ....7.65
BeaverFalls,Pa. M12,R2 7.65
Birmingham C15 .....8.25
Buffalo B5 .....7.70
Camden,N.J. P13 .....8.10
Carnegie,Pa. C12 .....7.65
Chicago W18 .....7.65
Cleveland A7, C20 ....7.65
Detroit B5, P17 .....7.85
Detroit S41 .....7.65
Donora,Pa. A7 .....7.65
Elyria,O. W8 .....7.65
FranklinPark,Ill. N5 ...7.65
Gary,Ind. R2 .....7.65
GreenBay,Wis. F7 .....7.65
Hammond,Ind. J5, L2..7.65
Hartford,Conn. R2 ....8.15
Harvey,Ill. B5 .....7.65
LosAngeles(49) S30 ....9.10
LosAngeles(49) P2, R2 9.10
Mansfield,Mass. B5 ....8.20
Massillon,O. R2, R8 ...7.65
Midland Pa. C18 .....7.65
Monaca,Pa. S17 .....7.65
Newark,N.J. W18 .....8.10
NewCastle,Pa.(17) B4 ..7.65
Pittsburgh J5 .....7.65
Plymouth,Mich. P5 ....7.90
Putnam,Conn. W18 ....8.20
Readville,Mass. C14 ....8.20
S.Chicago,Ill. W14 ....7.65
SpringCity,Pa. K3 ....8.10
Struthers,O. Y1 .....7.65
Warren,O. C17 .....7.65
Waukegan,Ill. A7 .....7.65
Willimantic,Conn. J5 ..8.15
Youngstown F3, Y1 ....7.65

BARS, Cold-Finished Carbon (Turned and Ground)

Cumberland,Md.(5) C19.6.55

BARS, Cold-Finished Alloy

Ambridge,Pa. W18 ....9.025
BeaverFalls Pa.M12,R2 9.025
Bethlehem,Pa. B2 .....9.025
Bridgeport,Conn. C32 ..9.175
Buffalo B5 .....9.025
Camden,N.J. P13 .....9.20
Canton,O. T7 .....9.025
Carnegie,Pa. C12 .....9.025
Chicago W18 .....9.025
Cleveland A7, C20 ....9.025
Detroit B5, P17 .....9.225
Detroit S41 .....9.025
Donora,Pa. A7 .....9.025
Elyria,O. W8 .....9.025
FranklinPark,Ill. N5 ..9.025
Gary,Ind. R2 .....9.025
GreenBay,Wis. F7 .....9.025
Hammond,Ind. J5, L2..9.025
Hartford,Conn. R2 ....9.325
Harvey,Ill. R5 .....9.025
Lackawanna,N.Y. B2..9.025
LosAngeles P2, S30 ....11.00
Mansfield,Mass. B5....9.325
Massillon,O. R2, R8 ..9.025
Midland,Pa. C18 .....9.025
Monaca,Pa. S17 .....9.025
Newark,N.J. W18 .....9.20
Plymouth,Mich. P5 ....9.225
S.Chicago,Ill. W14 ....9.025
SpringCity,Pa. K3 .....9.20
Struthers,O. Y1 .....9.025
Warren,O. C17 .....9.025
Waukegan,Ill. A7 .....9.025
Willimantic,Conn. J5 ..9.325
Worcester Mass. A7 ...9.325
Youngstown F3, Y1 ...9.025

BARS, Reinforcing, Billet (To Fabricators)

AlabamaCity,Ala. R2 ..5.675
Atlanta A11 .....5.675
Birmingham C15 .....5.675
Buffalo R2 .....5.675
Cleveland R2 .....5.675
Ecorse,Mich. G5 .....5.675
Emeryville,Calif. J7 ...6.425
Fairfield,Ala. T2 .....5.675
Fairless,Pa. U5 .....5.825
Fontana,Calif. K1 .....6.375
Ft.Worth,Tex(4)(26)T4 5.925
Gary,Ind. U5 .....5.675
Houston S5 .....5.925
Ind.Harbor,Ind. I-2,Y1 5.675
Johnstown,Pa. B2 ....5.675
Joliet,Ill. P22 .....5.675
KansasCity,Mo. S5 ....5.925
Kokomo,Ind. C16 .....5.775
Lackawanna,N.Y. B2 ..5.675
LosAngeles B3 .....6.375
Madison,Ill. L1 .....5.875
Milton,Pa. M18 .....5.825
Minnequa,Colo. C10 ..6.125
Niles,Calif. P1 .....6.375
Pittsburg,Calif. C11 ..6.375
Pittsburgh J5 .....5.675
Portland,Oreg. O4 ....6.425
SandSprings,Okla. S5 ..5.925
Seattle A24, B3, N14 .6.425
S.Chicago,Ill. R2, W14.5.675
S.Duquesne,Pa. U5 ....5.675
S.SanFrancisco B3 ....6.425
SparrowsPoint,Md. B2..5.675
Sterling,Ill. (1) N15 ..5.675
Sterling,Ill. N15 .....5.775
Struthers,O. Y1 .....5.675
Tonawanda,N.Y. B12 ...6.10
Torrance,Calif. C11 ...6.375
Youngstown R2, U5 ..5.675

BARS, Reinforcing, Billet (Fabricated: To Consumers)

Baltimore B2 .....7.42
Boston B2, U8 .....8.15
Chicago U8 .....7.41
Cleveland U8 .....7.39
Houston S5 .....7.60
Johnstown,Pa. B2 .....7.33
KansasCity,Mo. S5 ....7.60
Lackawanna, N.Y. B2 ..7.35
Marion,O. P11 .....6.70
Newark,N.J. U8 .....7.80
Philadelphia U8 .....7.63
Pittsburgh J5, U8 .....7.35
SandSprings,Okla. S5 ...7.60
Seattle A24, B3, N14 ..7.95
SparrowsPt.,Md. B2 ...7.33
St.Paul U8 .....8.17
Williamsport,Pa. S19 ...7.25

BARS, Wrought Iron

Economy,Pa.(S.R.)B14 14.90
Economy,Pa.(D.R.)B14 18.55
Economy(Staybolt)B14 19.00
McK.Rks.(S.R.) L5 ...14.50
McK.Rks.(D.R.) L5 ...19.80
McK.Rks.(Staybolt)L5. 20.95

BARS,Rail Steel

ChicagoHts.(3) C2, I-2.5.575
ChicagoHts.(4)(44) I-2 5.675
ChicagoHts. (4) C2 ....5.675
Franklin,Pa. (3) F5 ..5.575
Franklin,Pa.(4) F5 ...5.675
JerseyShore,Pa.(3) J8 ..5.55
Marion,O. (3) P11 ....5.575
Tonawanda(3) B12 ...5.575
Tonawanda(4) B12 ....6.10

SHEETS

SHEETS, Hot-Rolled Steel (18 Gage and Heavier)

AlabamaCity,Ala. R2 ...5.10
Allenport,Pa. P7 .....5.10
Aliquippa,Pa. J5 .....5.10
Ashland,Ky.(8) A10 ...5.10
Cleveland J5, R2 .....5.10
Conshohocken,Pa. A3 ..5.15
Detroit(8) M1 .....5.10
Ecorse,Mich. G5 .....5.10
Fairfield,Ala. T2 .....5.10
Fairless,Pa. U5 .....5.15
Farrell,Pa. S3 .....5.10
Fontana,Calif. K1 ....5.825
Gary,Ind. U5 .....5.10
Geneva,Utah C11 .....5.20
GraniteCity,Ill.(8) G4 ..5.20
Ind.Harbor,Ind. I-2, Y1.5.10
Irvin,Pa. U5 .....5.10
Lackawanna,N.Y. B2 ...5.10
Mansfield,O. E6 .....5.10
Munhall,Pa. U5 .....5.10
Newport,Ky. A2 .....5.10
Niles,O. M21, S3 .....5.10
Pittsburg,Calif. C11 ....5.80
Pittsburgh J5 .....5.10
Portsmouth,O. P12 .....5.10
Riverdale,Ill. A1 .....5.10
Sharon,Pa. S3 .....5.10
S.Chicago,Ill. U5, W14 ..5.10
SparrowsPoint,Md. B2 ..5.10
Steubenville,O. W10 ....5.10
Warren,O. R2 .....5.10
Weirton,W.Va. W6 ....5.10
Youngstown U5, Y1 ....5.10

SHEETS, H.R. (19 Ga. & Lighter)

Niles,O. M21, S3 .....6.275

SHEETS, H.R., Alloy

Gary,Ind. U5 .....8.40
Ind.Harbor,Ind. Y1 ....8.40
Irvin,Pa. U5 .....8.40
Munhall,Pa. U5 .....8.40
Newport,Ky. A2 .....8.40
Youngstown U5, Y1 ....8.40

SHEETS, H.R. (14 Ga. & Heavier) High-Strength, Low-Alloy

Aliquippa,Pa. J5 .....7.525
Ashland,Ky. A10 .....7.525
Cleveland J5, R2 .....7.525
Conshohocken,Pa. A3 ..7.575
Ecorse,Mich. G5 .....7.525
Fairfield,Ala. T2 .....7.525
Fairless,Pa. U5 .....7.575
Farrell,Pa. S3 .....7.525
Fontana,Calif. K1 .....8.25
Gary,Ind. U5 .....7.525
Ind.Harbor,Ind. I-2, Y1 7.525
Irvin,Pa. U5 .....7.525
Lackawanna(35) B2 ...7.525
Munhall,Pa. U5 .....7.525
Niles,O. S3 .....7.525
Pittsburgh J5 .....7.525
S.Chicago,Ill. U5, W14.7.525
Sharon,Pa. S3 .....7.525
SparrowsPoint(36) B2..7.525
Warren,O. R2 .....7.525
Weirton,W.Va. W6 ....7.525
Youngstown U5, Y1 ...7.525

SHEETS, Hot-Rolled Ingot Iron (18 Gage and Heavier)

Ashland,Ky.(8) A10 ....5.35
Cleveland R2 .....5.875
Warren,O. R2 .....5.875

SHEETS, Cold-Rolled Ingot Iron

Cleveland R2 .....7.05
Middletown,O. A10 ....6.775
Warren,O. R2 .....7.05

SHEETS, Cold-Rolled Steel (Commercial Quality)

AlabamaCity,Ala. R2 ..6.275
Aliquippa,Pa. J5 .....6.275
Allenport,Pa. P7 .....6.275
Cleveland J5, R2 .....6.275
Conshohocken,Pa. A3 ..6.325
Detroit M1 .....6.275
Ecorse,Mich. G5 .....6.275
Fairfield,Ala. T2 .....6.275
Fairless,Pa. U5 .....6.325
Follansbee,W.Va. F4 ..6.275
Fontana,Calif. K1 .....7.40
Gary,Ind. U5 .....6.275
GraniteCity,Ill. G4 ....6.375
Ind.Harbor,Ind. I-2, Y1 6.275
Irvin,Pa. U5 .....6.275
Lackawanna,N.Y. B2 ..6.275
Mansfield,O. E6 .....6.275
Middletown,O A10 ....6.275
Newport,Ky. A2 .....6.275
Pittsburg,Calif. C11 ....7.225
Pittsburgh J5 .....6.275
Portsmouth,O. P12 ....6.275
SparrowsPoint,Md. B2 .6.275
Steubenville,O. W10 ...6.275
Warren,O. R2 .....6.275
Weirton,W.Va. W6 ....6.275
Yorkville,O. W10 .....6.275
Youngstown Y1 .....6.275

SHEETS, Cold-Rolled, High-Strength, Low-Alloy

Aliquippa,Pa. J5 .....9.275
Cleveland J5, R2 .....9.275
Ecorse,Mich. G5 .....9.275
Fairless,Pa. U5 .....9.325
Fontana,Calif. K1 .....10.40
Gary,Ind. U5 .....9.275
Ind.Harbor,Ind. I-2, Y1 9.275
Lackawanna(37) B2 ..9.275
Pittsburgh J5 .....9.275
SparrowsPoint(38) B2..9.275
Warren,O. R2 .....9.275
Weirton,W.Va. W6 ....9.275
Youngstown Y1 .....9.275

SHEETS, Culvert

	Cu Steel	Cu Fe
Ala.City,Ala. R2	7.225	....
Ashland,Ky. A10	7.225	7.475
Canton,O. R2	7.225	....
Fairfield,Ala. T2	7.225	7.475
Gary,Ind. U5	7.225	7.475
GraniteCity,Ill.G4	7.325	....
Ind.Harbor I-2	7.225	7.475
Irvin,Pa. U5	7.225	7.475
Kokomo,Ind. C16	7.325	....
MartinsFry. W10	7.225	7.475
Pitts.,Calif. C11	7.975	....
Pittsburgh J5	7.225	....
SparrowsPt. B2	7.225	....

SHEETS, Culvert—Pure Iron

Ind.Harbor,Ind. I-2 ....7.475

SHEETS, Galvanized Steel Hot-Dipped

AlabamaCity,Ala. R2 .6.875‡
Ashland,Ky. A10 .....6.875‡
Canton,O. R2 .....6.875‡
Dover,O. E6 .....6.875†
Fairfield,Ala. T2 ....6.875†
Gary,Ind. U5 .....6.875†
GraniteCity,Ill. G4 ...6.975*
Ind.Harbor,Ind. I-2 ..6.875†
Irvin,Pa. U5 .....6.875†
Kokomo,Ind. C-16 ....6.975‡
MartinsFerry,O. W10..6.875*
Middletown,O. A10 ..6.875†
Pittsburg,Calif. C11 ..7.625*
Pittsburgh J5 .....6.875†
SparrowsPt.,Md. B2 ..6.875†
Warren,O. R2 .....6.875†
Weirton,W.Va. W6 ....6.875*

*Continuous and noncontinuous. †Continuous. ‡Noncontinuous.

SHEETS, Well Casing

Fontana,Calif. K1 ....7.325

SHEETS, Galvanized High-Strength, Low-Alloy

Irvin,Pa. U5 .....10.125
Pittsburgh J5 .....10.125
SparrowsPt.(39) B2 ..10.025

SHEETS, Galvannealed Steel

Canton,O. R2 .....7.275
Irvin,Pa. U5 .....7.275

SHEETS, Galvanized Ingot Iron (Hot-Dipped Continuous)

Ashland,Ky. A10 .....7.125
Middletown,O. A10 ....7.125

SHEETS, Electrogalvanized

Cleveland(28) R2 .....7.65
Niles,O.(28) R2 .....7.65
Weirton,W.Va. W6 .....7.50
Youngstown J5 .....7.50

SHEETS, Aluminum Coated

Butler,Pa. A10 (type 1) 9.525
Butler,Pa. A10 (type 2) 9.625

SHEETS, Enameling Iron

Ashland,Ky. A10 .....6.775
Cleveland R2 .....6.775
Fairfield,Ala. T2 .....6.775
Gary,Ind. U5 .....6.775
Ind.Harbor,Ind. I-2, Y1 6.775
Irvin,Pa. U5 .....6.775
Middletown,O. A10 ....6.775
Niles,O. M21, S3 .....6.775
Youngstown Y1 .....6.775

BLUED STOCK, 29 Gage

Dover,O. E6 .....8.70
Follansbee,W.Va. F4 ...8.70
Ind.Harbor,Ind. I-2 ....8.70
Mansfield,O. E6 .....8.70
Warren,O. R2 .....8.70
Yorkville,O. W10 .....8.70

SHEETS, Long Terne, Steel (Commercial Quality)

BeechBottom,W.Va.W10 7.225
Gary,Ind. U5 .....7.225
Mansfield,O. E6 .....7.225
Middletown,O. A10 ....7.225
Niles,O. M21, S3 .....7.225
Warren,O. R2 .....7.225
Weirton,W.Va. W6 ....7.225

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10 ....7.625

Key To Producers

A1 Acme Steel Co.
A2 Acme-Newport Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A5 Alloy Metal Wire Div., H. K. Porter Co. Inc.
A6 American Shim Steel Co.
A7 American Steel & Wire Div., U. S. Steel Corp.
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.
A24 Alaska Steel Mills Inc.

B1 Babcock & Wilcox
B2 Bethlehem Steel Co.
B3 Bethlehem Steel Co., Pacific Coast Div.
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B8 Braeburn Alloy Steel
B9 Brainard Steel Div., Sharon Steel Corp.
B10 E. & G. Brooke, Wickwire Spencer Steel Div., Colo. Fuel & Iron
B12 Buffalo Steel Corp.
B14 A. M. Byers Co.
B15 J. Bishop & Co.

C1 Calstrip Steel Corp.
C2 Calumet Steel Div., Borg-Warner Corp.
C4 Carpenter Steel Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel
C12 Columbia Steel & Shaft.
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft.
C15 Connors Steel Div., H. K. Porter Co., Inc.
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymont Plant, Wickwire Spencer Steel Div., Colo. Fuel & Iron
C23 Charter Wire Inc.
C24 G. O. Carlson Inc.
C32 Carpenter Steel of N.Eng.

D2 Detroit Steel Corp.
D4 Disston Div., H. K. Porter Co. Inc.
D6 Driver-Harris Co.
D7 Dickson Weatherproof Nail Co.
D8 Damascus Tube Co.
D9 Wilbur B. Driver Co.

E1 Eastern Gas&Fuel Assoc.
E2 Eastern Stainless Steel
E5 Elliott Bros. Steel Co.
E6 Empire-Reeves Steel Corp.
E10 Enamel Prod. & Plating

F2 Firth Sterling Inc.
F3 Fitzsimmons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div., Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
F8 Ft. Wayne Metals Inc.

G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.
G8 Green River Steel Corp.

H1 Hanna Furnace Corp.
H7 Helical Tube Co.

I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div., Borg-Warner Corp.
I-6 Ivins Steel Tube Works
I-7 Indiana Steel & Wire Co.

J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.

K1 Kaiser Steel Corp.
K2 Keokuk Electro-Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
K7 Kenmore Metals Corp.

L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L6 Lone Star Steel Co.
L7 Lukens Steel Co.
L8 Leschen Wire Rope Div., H. K. Porter Co. Inc.

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M6 Mercer Pipe Div., Sawhill Tubular Products
M8 Mid-States Steel & Wire
M12 Moltrup Steel Products
M14 McInnes Steel Co.
M16 Md. Fine & Specialty Wire Co. Inc.
M17 Metal Forming Corp.
M18 Milton Steel Div. Merritt-Chapman&Scott
M21 Mallory-Sharon Metals Corp.
M22 Mill Strip Products Co.

N1 National-Standard Co.
N2 National Supply Co.
N3 National Tube Div., U. S. Steel Corp.
N5 Nelsen Steel & Wire Co.
N6 New England High Carbon Wire Co.
N8 Newman-Crosby Steel
N14 Northwest. Steel Rolling Mills Inc.
N15 Northwestern S.&W. Co.
N20 Neville Ferro Alloy Co.

O4 Oregon Steel Mills

P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Steel Corp.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke&Chem.
P7 Pittsburgh Steel Co.
P11 Pollak Steel Co.
P12 Portsmouth Div., Detroit Steel Corp.
P13 Precision Drawn Steel
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., American Chain & Cable
P17 Plymouth Steel Corp.
P19 Pitts. Rolling Mills
P20 Prod. Steel Strip Corp.
P22 Phoenix Mfg. Co.
P24 Phil. Steel & Wire Corp.

R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R8 Reliance Div.,EatonMfg.
R9 Rome Mfg. Co.
R10 Rodney Metals Inc.

S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S4 Sharon Tube Co.
S5 Sheffield Div., Armco Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S12 Spencer Wire Corp.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S17 Superior Drawn Steel Co.
S18 Superior Steel Div., Copperweld Steel Co.
S19 Sweet's Steel Co.
S20 Southern States Steel
S23 Superior Tube Co.
S25 Stainless Welded Prod.
S26 Specialty Wire Co. Inc.
S30 Sierra Drawn Steel Corp.
S40 Seneca Steel Service
S41 Stainless & Strip Div., J&L Steel Corp.
S42 Southern Elec. Steel Co.
S43 Seymour Mfg. Co.
S44 Screw & Bolt Corp. of America

T2 Tenn. Coal & Iron Div., U. S. Steel Corp.
T3 Tenn. Products & Chemical Corp.
T4 Texas Steel Co.
T5 Thomas Strip Div., Pittsburgh Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div., Am. Rad. & Stan. San.
T13 Tube Methods Inc.
T19 Techalloy Co. Inc.

U3 Union Wire Rope Corp.
U4 Universal-Cyclops Steel
U5 United States Steel Corp.
U6 U. S. Pipe & Foundry
U7 Ulbrich Stainless Steels
U8 U. S. Steel Supply Div., U. S. Steel Corp.
U11 Union Carbide Metals Co.
U13 Union Steel Corp.

V2 Vanadium-Alloys Steel
V3 Vulcan-Kidd Steel Div., H. K. Porter Co.

W1 Wallace Barnes Steel Div., Associated Spring Corp.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W8 Western Automatic Machine Screw Co.
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div., International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.

Y1 Youngstown Sheet & Tube

STRIP

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2	.5.10
Allenport,Pa. P7	.5.10
Alton,Ill. L1	.5.30
Ashland,Ky.(8) A10	.5.10
Atlanta A11	.5.10
Bessemer,Ala. T2	.5.10
Birmingham C15	.5.10
Conshohocken,Pa. A3	.5.15
Detroit M1	.5.10
Ecorse,Mich. G5	.5.10
Fairfield,Ala. T2	.5.10
Farrell,Pa. S3	.5.10
Fontana,Calif. K1	.5.825
Gary,Ind. U5	.5.10
Ind.Harbor,Ind. I-2, Y1	.5.10
Johnstown,Pa.(25) B2	.5.10
Lackaw'na,N.Y.(25) B2	.5.10
LosAngeles(25) B3	.5.85
LosAngeles C1	.8.60
Minnequa,Colo. C10	.6.20
Riverdale,Ill. A1	.5.10
San Francisco S7	.6.60
Seattle(25) B3	.6.10
Seattle N14	.6.60
Sharon,Pa. S3	.5.10
S.Chicago,Ill. W14	.5.10
S.SanFrancisco(25) B3	.5.85
SparrowsPoint,Md. B2	.5.10
Torrance,Calif. C11	.5.85
Warren,O. R2	.5.10
Weirton,W.Va. W6	.5.10
Youngstown U5	.5.10

STRIP, Hot-Rolled Alloy

Carnegie,Pa. S18	.8.40
Farrell,Pa. S3	.8.40
Gary,Ind. U5	.8.40
Houston S5	.8.65
Ind.Harbor,Ind. Y1	.8.40
KansasCity,Mo. S5	.8.65
LosAngeles B3	.9.60
Lowellville,O. S3	.8.40
Newport,Ky. A2	.8.40
Sharon,Pa. A2, S3	.8.40
S.Chicago,Ill. W14	.8.40
Youngstown U5, Y1	.8.40

STRIP, Hot-Rolled High-Strength, Low-Alloy

Ashland,Ky. A10	.7.575
Bessemer,Ala. T2	.7.575
Conshohocken,Pa. A3	.7.575
Ecorse,Mich. G5	.7.575
Fairfield,Ala. T2	.7.575
Farrell,Pa. S3	.7.575
Gary,Ind. U5	.7.575
Ind.Harbor,Ind. I-2, Y1	7.575
Lackawanna,N.Y. B2	.7.575
LosAngeles(25) B3	.8.325
Seattle(25) B3	.8.575
Sharon,Pa. S3	.7.575
S.Chicago,Ill. W14	.7.575
S.SanFrancisco(25) B3	.8.325
SparrowsPoint,Md. B2	.7.575
Warren,O. R2	.7.575
Weirton,W.Va. W6	.7.575
Youngstown U5, Y1	.7.575

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10	.5.35
Warren,O. R2	.5.875

STRIP, Cold-Rolled Carbon

Anderson,Ind. G6	.7.425
Baltimore T6	.7.425
Boston T6	.7.975
Buffalo S40	.7.425
Cleveland A7, J5	.7.425
Dearborn,Mich. S3	.7.425
Detroit D2, M1, P20	.7.425
Dover,O. G6	.7.425
Evanston,Ill. M22	.7.525
Farrell,Pa. S3	.7.425
Follansbee,W.Va. W10	.7.425
Fontana,Calif. K1	.9.20
FranklinPark,Ill. T6	.7.525
Ind.Harbor,Ind. Y1	.7.425
Indianapolis S41	.7.575
LosAngeles C1, S41	.9.30
McKeesport,Pa. E10	.7.525
NewBedford,Mass. R10	.7.875
NewBritain,Conn. S15	.7.875
NewCastle,Pa. B4, E5	.7.425
NewHaven,Conn. D2	.7.875
NewKensington,Pa. A6	.7.425
Pawtucket,R.I. R3	.7.975
Pawtucket,R.I. N8	.7.975
Philadelphia P24	.7.875
Pittsburgh J5	.7.425
Riverdale,Ill. A1	.7.525
Rome,N.Y.(32) R6	.7.425
Sharon,Pa. S3	.7.425
Trenton,N.J.(31) R5	.8.875
Wallingford,Conn. W2	.7.875
Warren,O. R2, T5	.7.425
Worcester,Mass. A7	.7.975

STRIP, Cold-Rolled Alloy

Boston T6	.15.90
Carnegie,Pa. S18	.15.55
Cleveland A7	.15.55
Dover,O. G6	.15.55
Farrell,Pa. S3	.15.55
FranklinPark,Ill. T6	.15.55
Harrison,N.J. S18	.15.55
Indianapolis S41	.15.70
LosAngeles S41	.17.75
Lowellville,O. S3	.15.55
Pawtucket,R.I. N8	.15.90
Riverdale,Ill. A1	.15.55
Sharon,Pa. S3	.15.55
Worcester,Mass. A7	.15.85
Youngstown S41	.15.55

STRIP, Cold-Rolled High-Strength, Low-Alloy

Cleveland A7	.10.80
Dearborn,Mich. S3	.10.80
Dover,O. G6	.10.80
Farrell,Pa. S3	.10.80
Ind.Harbor,Ind. Y1	.10.80
Sharon,Pa. S3	.10.80
Warren,O. R2	.10.80

STRIP, Cold-Finished Spring Steel (Annealed)

	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Baltimore T6	9.50	10.70	12.90	15.90	18.85
Boston T6	9.50	10.70	12.90	15.90	18.85
Bristol,Conn. W1	....	10.70	12.90	16.10	19.30
Carnegie,Pa. S18	8.95	10.40	12.60	15.60	....
Cleveland A7	8.95	10.40	12.60	15.60	18.55
Dearborn,Mich. S3	9.05	10.50	12.70	....	....
Detroit D2	9.05	10.50	12.70	15.70	....
Dover,O. G6	8.95	10.40	12.60	15.60	18.55
Evanston,Ill. M22	8.95	10.40	12.60	15.60	....
Farrell,Pa. S3	8.95	10.40	12.60	15.60	18.56
Fostoria,O. S1	10.05	10.40	12.60	15.60	....
FranklinPark,Ill. T6	9.05	10.40	12.60	15.60	18.55
Harrison,N.J. C18	....	....	12.90	16.10	19.30
Indianapolis S41	9.10	10.55	12.60	15.60	18.55
LosAngeles C1	11.15	12.60	14.80	17.80	....
LosAngeles S41	11.15	12.60	14.80	....	....
NewBritain,Conn. S15	9.40	10.70	12.90	15.90	18.85
NewCastle,Pa. B4, E5	8.95	10.40	12.60	15.60	....
NewHaven,Conn. D2	9.40	10.70	12.90	15.90	....
NewKensington,Pa. A6	9.85	10.40	12.60	15.60	....
NewYork W3	....	10.70	12.90	16.10	19.30
Pawtucket,R.I. N8	9.50	10.70	12.90	15.90	18.85
Riverdale,Ill. A1	9.05	10.40	12.60	15.60	18.55
Rome,N.Y.(32) R6	8.95	10.40	12.60	15.60	18.55
Sharon,Pa. S3	8.95	10.40	12.60	15.60	18.55
Trenton,N.J. R5	....	10.70	12.90	15.90	18.85
Wallingford,Conn. W2	9.40	10.70	12.90	15.90	18.75
Warren,O. T5	8.95	10.40	12.60	15.60	18.55
Worcester,Mass. A7, T6	9.50	10.70	12.90	15.90	18.85
Youngstown S41	8.95	10.40	12.60	15.60	18.55

Spring Steel (Tempered)

	0.80C	1.05C	1.35C
Bristol,Conn. W1	18.85	22.95	27.80
Buffalo W12	18.85	....	....
Fostoria,O. S1	19.05	22.15	....
FranklinPark,Ill. T6	19.20	23.30	28.15
Harrison,N.J. C18	18.85	22.95	27.80
New York W3	18.85	22.95	27.80
Palmer,Mass. W12	18.85	....	....
Trenton,N.J. R5	18.85	22.95	27.80
Worcester,Mass. A7, T6	18.85	22.95	27.80
Youngstown S41	19.20	23.30	28.15

TIN MILL PRODUCTS

TIN PLATE, Electrolytic (Base Box)	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	$9.10	$9.35	$9.75
Fairfield,Ala. T2	9.20	9.45	9.85
Fairless,Pa. U5	9.20	9.45	9.85
Fontana,Calif. K1	9.75	10.00	10.40
Gary,Ind. U5	9.10	9.35	9.75
GraniteCity,Ill. G4	9.20	9.45	9.60
IndianaHarbor,Ind. I-2, Y1	9.10	9.35	9.75
Irvin,Pa. U5	9.10	9.35	9.75
Niles,O. R2	9.10	9.35	9.75
Pittsburg,Calif. C11	9.75	10.00	10.40
SparrowsPoint,Md. B2	9.10	9.35	9.75
Weirton,W.Va. W6	9.10	9.35	9.75
Yorkville,O. W10	9.10	9.35	9.75

ELECTROLYTIC TIN-COATED SHEET (Dollars per 100 lb)			
Aliquippa,Pa. J5 (21-27 Ga.)	7.90	8.10	....
IndianaHarbor,Ind. Y1 (20-27 Ga.)	7.90	....	....
Niles,O. R2 (20-27 Ga.)	7.90	8.10	8.30

TIN PLATE, Hot Dipped Common Coke	1.25 lb	1.50 lb
Aliquippa,Pa. J5	$10.40	$10.65
Fairfield,Ala. T2	10.50	10.75
Fontana,Calif. K1	11.05	11.30
Gary,Ind. U5	10.40	10.65
Ind.Harb. Y1	10.40	10.65
Irvin,Pa. U5	10.40	10.65
Pitts.-Calif. C11	11.05	11.30
Sp.Pt.,Md. B2	10.40	10.65
Weirton,W.Va. W6	10.40	10.65
Yorkville,O. W10	10.40	10.65

BLACK PLATE (Base Box)	
Aliquippa,Pa. J5	$8.20
Fairfield,Ala. T2	8.30
Fairless,Pa. U5	8.30
Fontana,Calif. K1	8.85
Gary,Ind. U5	8.20
GraniteCity,Ill. G4	8.30
Ind.Harbor,Ind. I-2, Y1	8.20
Irvin,Pa. U5	8.20
Niles,O. R2	8.20
Pittsburg,Calif. C11	8.85
SparrowsPoint,Md. B2	8.20
Weirton,W.Va. W6	8.20
Yorkville,O. W10	8.20

HOLLOWARE ENAMELING Black Plate (29 Gage)	
Aliquippa,Pa. J5	7.85
Gary,Ind. U5	7.85
GraniteCity,Ill. G4	7.95
Ind.Harbor,Ind. Y1	7.85
Irvin,Pa. U5	7.85
Yorkville,O. W10	7.85

MANUFACTURING TERNES (Special Coated, Base Box)	
Gary,Ind. U5	$10.05
Irvin,Pa. U5	10.05
Weirton,W.Va. W6	10.80
Youngstown Y1	10.80

STRIP, Cold-Rolled Ingot Iron	
Warren,O. R2	8.175

STRIP, C.R. Electrogalvanized	
Cleveland A7	7.425*
Dover,O. G6	7.425*
Evanston,Ill. M22	7.525*
McKeesport,Pa. E10	7.50*
Riverdale,Ill. A1	7.525*
Warren,O. B9, S3, T5	7.425*
Worcester,Mass. A7	7.975
Youngstown S41, Y1	7.425*

*Plus galvanizing extras.

STRIP, Galvanized (Continuous)	
Farrell,Pa. S3	7.50
Sharon,Pa. S3	7.50

TIGHT COOPERAGE HOOP	
Atlanta A11	5.65
Farrell,Pa. S3	5.525
Riverdale,Ill. A1	5.675
Sharon,Pa. S3	5.525
Youngstown U5	5.525

SILICON STEEL

C.R. COILS & CUT LENGTHS (22 Ga.)

Fully Processed (Semiprocessed ½c lower)	Field	Armature	Electric	Motor	Dynamo
BeechBottom,W.Va. W10	....	11.70	12.40	13.35	14.65
Brackenridge,Pa. A4	....	....	12.40	13.55	14.65
GraniteCity,Ill. G4	9.975*	11.30*	12.00*	13.15*	....
Indiana Harbor,Ind. I-2	9.875*	11.20*	11.90*	13.05*	....
Mansfield,O. E6	9.875*	11.70	12.40	13.55	14.65
Newport,Ky. A2	9.875	11.70*	12.40*	13.55*	14.65*
Niles,O. M21	9.875*	11.70	12.40	13.55	....
Vandergrift,Pa. U5	9.875*	11.70	12.40	13.55	14.65
Warren,O. R2	9.875*	11.70	12.40	13.55	14.65
Zanesville,O. A10	....	11.70†	12.40	13.55	14.65

	Stator
Vandergrift,Pa. U5	8.10
Mansfield O. E6	8.10
Warren,O. R2 (Silicon Lowcore)	8.10

SHEETS (22 Ga., coils & cut lengths)

Fully Processed (Semiprocessed ½c lower)	T-72	T-65	T-58	T-52
BeechBottom,W.Va. W10	15.70	16.30	16.80	17.85
Vandergrift,Pa. U5	15.70	16.30	16.80	17.85
Zanesville O. A10	15.70	16.30	16.80	17.85

C.R. COILS & CUT LENGTHS (22 Ga.)	Grain Oriented T-100	T-90	T-80	T-73	T-66	T-72
Brackenridge,Pa. A4	18.10	19.70	20.20	20.70	15.70††	
Butler Pa. A10	....	19.70	20.20	20.70	....	
Vandergrift,Pa. U5	17.10	18.10	19.70	20.20	20.70	15.70
Warren,O. R2	....	....	....	....	....	15.70‡

*Semiprocessed. †Fully processed only. ‡Coils, annealed; semiprocessed ½c lower. ††Coils only.

WIRE

WIRE, Manufacturers Bright, Low Carbon

AlabamaCity,Ala. R2	.8.00
Aliquippa,Pa. J5	.8.00
Alton Ill. L1	.8.20
Atlanta A1	.8.00
Bartonville,Ill. K4	.8.10
Buffalo W12	.8.00
Chicago W13	.8.00
Cleveland A7, C20	.8.00
Crawfordsville,Ind. M8	.8.10
Donora,Pa. A7	.8.00
Duluth A7	.8.00
Fairfield,Ala. T2	.8.00
Fostoria,O.(24) S1	.8.10
Houston S5	.8.25
Jacksonville,Fla. M8	.8.35
Johnstown,Pa. B2	.8.00
Joliet,Ill. A7	.8.00
KansasCity,Mo. S5	.8.25
Kokomo,Ind. C16	.8.10
LosAngeles B3	.8.95
Minnequa,Colo. C10	.8.25
Monessen,Pa. P7, P16	.8.00
Palmer,Mass. W12	.8.30
Pittsburg,Calif. C11	.8.95
Portsmouth,O. P12	.8.00
Rankin,Pa. A7	.8.00
S.Chicago,Ill. R2	.8.00
S.SanFrancisco C10	.8.95
SparrowsPoint,Md. B2	.8.10
Sterling,Ill.(1) N15	.8.00
Sterling,Ill. N15	.8.10
Struthers,O. Y1	.8.00
Waukegan,Ill. A7	.8.00
Worcester,Mass. A7	.8.30

WIRE, Cold Heading Carbon

Elyria,O. W8	.8.00

Wire, Gal'd., for ACSR

Bartonville,Ill. K4	.12.65
Buffalo W12	.13.40
Cleveland A7	.12.65
Donora,Pa. A7	.12.65
Duluth A7	.12.65
Johnstown,Pa. B2	.13.40
KansasCity,Mo. U3	.12.90
Minnequa,Colo. C10	.12.775
Monessen,Pa. P7, P16	.12.65
Muncie,Ind. I-7	.13.60
NewHaven,Conn. A7	.12.95
Palmer,Mass. W12	.13.70
Pittsburg,Calif. C11	.13.45
Portsmouth,O. P12	.12.65
Roebling,N.J. R5	.12.95
SparrowsPt.,Md. B2	.13.50
Struthers,O. Y1	.13.40
Trenton,N.J. A7	.12.95
Waukegan,Ill. A7	.12.65
Worcester,Mass. A7	.12.95

WIRE, Upholstery Spring

Aliquippa,Pa. J5	.9.75
Alton,Ill. L1	.9.95
Buffalo W12	.9.75
Cleveland A7	.9.75
Donora,Pa. A7	.9.75
Duluth A7	.9.75
Johnstown,Pa. B2	.9.75
KansasCity,Mo. S5, U3	.10.00
LosAngeles B3	.10.70
Minnequa,Colo. C10	.9.95
Monessen,Pa. P7, P16	.9.75
NewHaven,Conn. A7	.10.05
Palmer,Mass. W12	.10.05
Pittsburg,Calif. C11	.10.70
Portsmouth,O. P12	.9.75
Roebling,N.J. R5	.10.05
S.Chicago,Ill. R2	.9.75
S.SanFrancisco C10	.10.70
SparrowsPt.,Md. B2	.9.85
Struthers,O. Y1	.9.75
Trenton,N.J. A7	.10.05
Waukegan,Ill. A7	.9.75
Worcester,Mass. A7,J4,T6	10.05

WIRE, Fine & Weaving(8" Coils)

Alton,Ill. L1	.16.50
Bartonville Ill. K4	.16.40
Chicago W13	.16.30
Cleveland A7	.16.30
Crawfordsville,Ind. M8	.16.40
Fostoria,O. S1	.16.30
Houston S5	.16.55
Jacksonville,Fla. M8	.16.65
Johnstown,Pa. B2	.16.30
KansasCity,Mo. S5	.16.55
Kokomo,Ind. C16	.16.30
Minnequa,Colo. C16	.16.55
Monessen,Pa. P16	.16.30
Muncie,Ind. I-7	.16.50
Palmer,Mass. W12	.16.60
S.SanFrancisco C10	.17.15
Waukegan,Ill. A7	.16.30
Worcester,Mass. A7,J6	.16.60

WIRE, Tire Bead

Bartonville,Ill. K4	.17.15
Monessen Pa. P16	.17.15
Roebling,N.J. R5	.17.65

ROPE WIRE	(A)
Bartonville,Ill. K4	13.45
Buffalo W12	13.45
Fostoria,O. S1	13.45
KansasCity,Mo. U3	13.70
Johnstown,Pa. B2	13.45
Monessen,Pa. P7	13.45
Muncie,Ind. I-7	13.65
Palmer,Mass. W12	13.75
Portsmouth,O. P12	13.45
Roebling,N.J. R5	13.75
St.Louis L8	13.45
SparrowsPt.,Md. B2	13.55
Struthers,O. Y1	13.45
Worcester,Mass. J4	13.75

(A) Plow and Mild Plow; add 0.25c for Improved Plow.

Wire, Cold-Rolled Flat

Anderson,Ind. G6	12.35
Baltimore T6	12.65
Boston T6	12.65
Buffalo W12	12.35
Chicago W13	12.45
Cleveland A7	12.35
Crawfordsville,Ind. M8	12.35
Dover,O. G6	12.35
Farrell,Pa. S3	12.35
Fostoria,O. S1	12.35
FranklinPark,Ill. T6	12.45
Kokomo,Ind. C16	12.35
Massillon,O. R8	12.35
Milwaukee C23	12.55
Monessen,Pa. P7, P16	12.35
Palmer Mass. W12	12.65
Pawtucket,R.I. N8	12.65
Philadelphia P24	12.65
Riverdale,Ill. A1	12.45
Rome,N.Y. R6	12.35
Sharon,Pa. S3	12.35
Trenton,N.J. R5	12.65
Warren,O. B9	12.35
Worcester,Mass. A7,T6	12.65

NAILS, Stock

	Col.
AlabamaCity,Ala. R2	173
Aliquippa,Pa. J5	173
Atlanta A11	175
Bartonville,Ill. K4	175
Chicago W13	173
Cleveland A9	173
Crawfordsville,Ind. M8	175
Donora,Pa. A7	173
Duluth A7	173
Fairfield,Ala. T2	173
Houston S5	178
Jacksonville,Fla. M8	175
Johnstown,Pa. B2	173
Joliet Ill. A7	173
KansasCity,Mo. S5	178
Kokomo,Ind. C16	175
Minnequa,Colo. C10	175
Monessen,Pa. P7	173
Pittsburg,Calif. C11	192
Rankin,Pa. A7	173
S.Chicago,Ill. R2	173
SparrowsPt.,Md. B2	175
Sterling,Ill.(7) N15	175
Worcester,Mass. A7	179

(To Wholesalers: per cwt)

Galveston,Tex. D7 ... $10.30

NAILS, Cut (100 lb kegs)

Wheeling,W.Va. W10 .. $10.10

POLISHED STAPLES

	Col.
AlabamaCity,Ala. R2	175
Aliquippa,Pa. J5	173
Atlanta A11	177
Bartonville,Ill. K4	175
Crawfordsville Ind. M8	177
Donora,Pa. A7	173
Duluth A7	173
Fairfield,Ala. T2	173
Houston S5	180
Jacksonville,Fla. M8	177
Johnstown,Pa. B2	175
Joliet,Ill. A7	173
KansasCity,Mo. S5	180
Kokomo,Ind. C16	177
Minnequa Colo. C10	180
Pittsburg,Calif. C11	194
Rankin,Pa. A7	173
S.Chicago,Ill. R2	175
SparrowsPt.,Md. B2	177
Sterling,Ill.(7) N15	175
Worcester,Mass. A7	181

TIE WIRE, Automatic Baler (14½ Ga.)(per 97 lb Net Box) Coil No. 3150

AlabamaCity,Ala. R2	$9.24
Atlanta A11	10.36
Bartonville Ill. K4	9.34
Buffalo W12	10.26
Chicago W13	9.24
Crawfordsville,Ind. M8	9.34
Donora,Pa. A7	9.24
Duluth A7	9.24
Fairfield,Ala. T2	9.24
Houston S5	10.51
Jacksonville,Fla. M8	9.34
Johnstown,Pa. B2	10.26
Joliet,Ill. A7	9.24
KansasCity,Mo. S5	10.51
Kokomo,Ind. C16	9.34
LosAngeles B3	11.05
Minnequa,Colo. C10	10.51
Pittsburg,Calif. C11	9.94
S.Chicago,Ill. R2	9.24
S.SanFrancisco C10	11.04
SparrowsPt.,Md. B2	10.36
Sterling,Ill.(37) N15	9.34

Coil No. 6500 Stand.

AlabamaCity,Ala. R2	$9.54
Atlanta A11	10.70
Bartonville,Ill. K4	9.64
Buffalo W12	10.60
Chicago W13	9.54
Crawfordsville,Ind. M8	9.64
Donora,Pa. A7	9.54
Duluth A7	9.54
Fairfield,Ala. T2	9.54
Houston S5	10.85
Jacksonville,Fla. M8	9.64
Johnstown,Pa. B2	10.60
Joliet,Ill. A7	9.54
KansasCity,Mo. S5	10.85
Kokomo,Ind. C16	9.64
LosAngeles B3	11.40
Minnequa,Colo. C10	10.85
Pittsburg,Calif. C11	10.28
S.Chicago,Ill. R2	9.54
S.SanFrancisco C10	11.40
SparrowsPt.,Md. B2	10.70
Sterling,Ill.(37) N15	9.64

Coil No. 6500 Interim

AlabamaCity,Ala. R2	$9.59
Atlanta A11	10.75
Bartonville,Ill K4	9.69
Buffalo W12	10.65
Chicago W13	9.59
Crawfordsville,Ind. M8	9.69
Donora,Pa. A7	9.59
Duluth A7	9.59
Fairfield,Ala. T2	9.59
Houston S5	10.90
Jacksonville,Fla. M8	9.69
Johnstown,Pa. B2	10.65
Joliet,Ill. A7	9.59
KansasCity,Mo. S5	10.90
Kokomo,Ind. C16	9.69
LosAngeles B3	14.45
Minnequa,Colo. C10	10.90
Pittsburg,Calif. C11	10.31
S.Chicago,Ill. R2	9.59
S.SanFrancisco C10	11.45
SparrowsPt.,Md. B2	10.75
Sterling,Ill.(37) N15	9.69

BALE TIES, Single Loop

	Col.
AlabamaCity,Ala. R2	212
Atlanta A11	214
Bartonville Ill. K4	214
Crawfordsville,Ind. M8	214
Donora,Pa. A7	212
Duluth A7	212
Fairfield,Ala. T2	212
Houston S5	217
Jacksonville,Fla. M8	214
Joliet,Ill. A7	212
KansasCity,Mo. S5	217
Kokomo,Ind. C16	214
Minnequa,Colo. C10	217
Pittsburg,Calif. C11	236
S.SanFrancisco C10	236
SparrowsPt.,Md. B2	214
Sterling,Ill(7) N15	214

FENCE POSTS

	Col.
Birmingham C15	177
ChicagoHts.,Ill. C2, I-2	177
Duluth A7	177
Franklin,Pa. F5	177
Johnstown,Pa. B2	177
Marion,O. P11	177
Minnequa,Colo. C10	182
Tonawanda,N.Y. B12	177

WIRE, Barbed

	Col.
AlabamaCity,Ala. R2	193*
Aliquippa,Pa. J5	190§
Atlanta A11	198§
Bartonville,Ill. K4	198
Crawfordsville,Ind. M8	198
Donora,Pa. A7	193†
Duluth A7	193†
Fairfield,Ala. T2	193†
Houston S5	198**
Jacksonville,Fla. M8	198
Johnstown,Pa. B2	196§
Joliet,Ill. A7	193†
KansasCity,Mo. S5	198**
Kokomo,Ind. C16	195†
Minnequa,Colo. C10	198**
Monessen,Pa. P7	196§
Pittsburg,Calif. C11	213†
Rankin,Pa. A7	193†
S.Chicago,Ill. R2	193**
S.SanFrancisco C10	213*
SparrowsPoint,Md. B2	198§
Sterling,Ill.(7) N15	198

WOVEN FENCE, 9-15 Ga.

	Col.
Ala.City,Ala. R2	187**
Aliq'ppa,Pa.9-11½ga.J5	190§
Atlanta A11	192§
Bartonville,Ill. K4	192
Crawfordsville,Ind. M8	192
Donora,Pa. A7	187†
Duluth A7	187†
Fairfield,Ala. T2	187†
Houston S5	192**
Jacksonville,Fla. M8	192
Johnstown,Pa.(43) B2	190§
Joliet,Ill. A7	187†
KansasCity,Mo. S5	192**
Kokomo,Ind. C16	189†
Minnequa,Colo. C10	192**
Pittsburg,Calif. C11	210†
Rankin,Pa. A7	187†
S.Chicago,Ill. R2	187**
Sterling,Ill.(7) N15	192

WIRE (16 gage)	An'ld Galv. Stone	Stone
Ala.City,Ala.R2	17.85	19.40**
Aliq'ppa,Pa. J5	17.85	19.65
Bartonville K4	17.95	19.80
Cleveland A7	17.85	....
Craw'dville B8	17.95	19.80‡‡
Fostoria,O. S1	18.35	19.90†
Houston S5	18.10	19.65**
Jacksonville M8	18.95	19.80‡‡
Johnstown B2	17.85	19.65§
Kan.City,Mo. S5	18.10	....
Kokomo C16	17.25	18.80†
Minnequa C10	18.10	19.65**
P'lm'r,Mass.W12	18.15	19.70†
Pitts.Calif. C11	18.20	19.75†
S.San.Fran. C10	18.20	19.75**
St'ling(37) N15	17.95	19.80
SparrowsPt. B2	17.95	19.75§
Waukegan A7	17.85	19.40†
Worcester A7	18.15	....

WIRE, Merchant Quality

(6 to 8 gage)	An'd Galv.
Ala.City,Ala. R2	9.00 9.55**
Aliquippa J5	8.65 9.325§
Atlanta(48)A11	9.10 9.775§
Bartonville(48) K4	9.10 9.80
Buffalo W12	9.00 9.55†
Cleveland A7	9.00 ....
Crawfordsville M8	9.10 9.80††
Donora,Pa. A7	9.00 9.55†
Duluth A7	9.00 9.55†
Fairfield T2	9.00 9.55†
Houston(48) S5	9.25 9.80**
Jack'ville,Fla. M8	9.10 9.80‡‡
Johnstown(48) B2	9.00 9.675§
Joliet,Ill. A7	9.00 9.55†
KansasCity(48)S5	9.25 9.80**
Kokomo(48) S16	9.10 9.65†
LosAngeles B3	9.95 10.625§
Monessen(48) P7	8.85 9.35§
Palmer,Mass. W12	9.30 9.85†
Pitts.Calif. C11	9.95 10.50†
Rankin,Pa. A7	9.00 9.55†
S.Chicago R2	9.00 9.55**
S.SanFran. C10	9.95 10.50**
Swar'wsPt.(48)B2	9.10 9.775§
St'ling(37)(48) N15	9.10 9.80
Struthers,O. Y1	9.00 9.65‡
Worcester,Mass.A7	9.30 9.85†

Based on zinc price of: *13.50, †5c, §10c. ‡Less than 10c. ††10.50c, ‡‡11.00c. **Subject to zinc equalization extras.

FASTENERS

(Consumer discounts, per cent off list prices, orders for 1 container for assorted sizes; for less than container quantities, add 25 per cent; attaching nuts to bolts, package sizes, add 7.5 per cent; heavy hex nuts 1⅛ in. through 1½ in. tapped 8 threads, add 10 per cent)

HEX HEAD CAP SCREWS, coarse or fine thread, packaged or bulk, with or without hex nuts, 1020 steel bright and high carbon heat treated, ¼ in. thru 1 in. diam., listed lengths:

Plain Finish	50
Hot Galvanized and Zinc Plated:	
Packaged	43.75
Bulk	50

BOLTS, standard stock sizes:

Plain Finish	50
Hot Galvanized and Zinc Plated:	
Packaged	43.75
*Bulk	50

*Hot galvanized or zinc plated lag bolts only—for package or bulk quantities use applicable list less bulk discounts.

HEXAGON NUTS, American Standard: Finished hex, hex jam, and hex slotted coarse or fine thread, ¼ in. through 3 in., finished hex thick, thick and slotted, castle, fine thread, ¼ in. through 1½ in., semifinished hex heavy, heavy and jam, heavy and slotted, coarse thread, ¼ in. through 4 in., and

SQUARE NUTS, American Standard: Regular square and heavy square, coarse thread, ¼ in. through 2 in.:

Plain Finish	50
Hot Galvanized and Zinc Plated:	
Packaged	43.75
Bulk	50

CAP AND SETSCREWS Filister Head, Cap Screws, Coarse Thread:

Packages	+55
Bulk	+16
Flat Head Cap Screws: ¾ in. and smaller, 6 in. and shorter:	
Packages	+85
Bulk	+38
Setscrews, Square Head, Cup Point, Coarse Thread: Through 1 in. diam, 6 in. and shorter:	
Packages	+ 5
Bulk	+19
Through 1 in. diam., longer than 6 in.:	
Packages	+29

RIVETS

F.o.b. Cleveland and/or freight equalized with Pittsburgh, f.o.b. Chicago and/or freight equalized with Birmingham except where equalization is too great.

Structural ½ in., larger 12.85 7/8 in. and smaller by 6 in. and shorter: 15% off list.

PRESTRESSED STRAND

(High strength, stress relieved; 7 wire uncoated. Net prices per 1000 ft, 40,000 lb and over)

	Standard Diameter, Inches 1/4	5/16	3/8	7/16	1/2
Alton,Ill. L1	$28.95	$43.40	$55.40	$73.00	$95.10
Buffalo W12	28.95	43.40	55.40	73.00	95.10
Cleveland A7	28.95	43.40	55.40	73.00	....
KansasCity,Mo. U3	29.85	43.00	55.40	73.00	95.10
Monessen,Pa. P16	32.15	48.20	61.55	81.10	105.65
NewHaven,Conn. A7	28.95	43.40	55.40	73.00	95.10
Pittsburg,Calif. C11	28.95	43.40	55.40	73.00	95.10
Pueblo,Colo. C10	28.95	43.40	55.40	73.00	95.10
Roebling,N.J. R5	28.95	43.40	55.40	73.00	95.10
SparrowsPoint,Md. B2	28.95	43.40	55.40	73.00	95.10
St.Louis L8	28.95	43.40	55.40	73.00	95.10
Waukegan,Ill. A7	28.95	43.40	55.40	73.00	95.10

BOILER TUBES

Net base c.l. prices, dollars per 100 ft, mill; minimum wall thickness, cut lengths 10 to 24 ft, inclusive.

O.D. In.	B.W. Gage	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.
1	13	....	27.24	23.13
1¼	13	....	32.25	24.41
1½	13	30.42	35.65	26.98
1¾	13	35.94	42.12	31.89
2	13	40.28	47.21	35.74
2¼	13	45.36	53.17	40.26
2½	12	49.24	57.72	43.70
2½	12	54.23	63.57	48.13
2¾	12	58.73	68.83	52.13
3	12	62.62	73.40	55.59

RAILWAY MATERIALS

Rails	Standard No. 1	Standard No. 2	Standard All No. 2	Tee Rails 60 lb Under
Bessemer,Pa. U5	5.75	5.60	....	6.725
Ensley,Ala. T2	5.75	5.65	....	6.725
Fairfield,Ala. T2	....	....	....	6.725
Gary,Ind. U5	5.75	5.65	....	....
Huntington,W.Va. C15	....	....	....	6.725
Johnstown,Pa. B2	....	....	....	(16)6.725
Lackawanna,N.Y. B2	5.75	5.65	....	6.725
Minnequa,Colo. C10	5.75	5.65	....	7.225
Steelton,Pa. B2	5.75	5.65	....	....
Williamsport,Pa. S19	....	....	....	6.725

TIE PLATES

Fairfield,Ala. T2	6.875
Gary,Ind. U5	6.875
Lackawanna,N.Y. B2	6.875
Minnequa,Colo. C10	6.875
Seattle B3	7.025
Steelton,Pa. B2	6.875
Torrance,Calif. C11	6.875

JOINT BARS

Bessemer,Pa. U5	7.25
Fairfield,Ala. T2	7.25
Joliet,Ill. U5	7.25
Lackawanna,N.Y. B2	7.25
Minnequa,Colo. C10	7.25
Steelton,Pa. B2	7.25

AXLES

Ind.Harbor,Ind. S13	9.125
Johnstown,Pa. B2	9.125

TRACK BOLTS, Untreated

Cleveland R2	15.35
KansasCity,Mo. S5	15.35
Lebanon,Pa. B2	15.35
Minnequa,Colo. C10	15.35
Pittsburgh S44	15.35
Seattle B3	15.85

SCREW SPIKES

Lebanon,Pa. B2	15.10

STANDARD TRACK SPIKES

Fairfield,Ala. T2	10.10
Ind.Harbor,Ind. I-2,Y1	10.10
KansasCity,Mo. S5	10.10
Lebanon,Pa. B2	10.10
Minnequa,Colo. C10	10.10
Pittsburgh J5	10.10
Seattle B3	10.60
S.Chicago,Ill. R2	10.10
Struthers,O. Y1	10.10
Youngstown R2	10.10

Footnotes

(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant.
(4) Reinforcing.
(5) 1½ to under 1 7/16 in.; 1 7/16 to under 1 15/16 in., 6.70c; 1 15/16 to 8 in., inclusive, 7.05c.
(6) Chicago or Birm. base.
(7) Chicago base 2 cols. lower.
(8) 16 Ga. and heavier.
(9) Merchant quality; add 0.35c for special quality.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass., base.
(13) Add 0.25c for 17 Ga. & heavier.
(14) Gage 0.143 to 0.249 in.; for gage 0.142 and lighter, 5.80c.
(15) ¾" and thinner.
(16) 40 lb and under.
(17) Flats only; 0.25 in. & heavier.
(18) To dealers.
(19) Chicago & Pitts. base.
(21) New Haven, Conn., base.
(22) Deld. San Francisco Bay area.
(23) Special quality.
(24) Deduct 0.05c, finer than 15 Ga.
(25) Bar mill bands.
(26) Deld. in mill zone, 6.295c.
(27) Bar mill sizes.
(28) Bonderized.
(29) Youngstown base.
(30) Sheared; for universal mill add 0.45c.
(31) Widths over ⅝ in.; 7.375c, for widths ⅝ in. and under by 0.125 in. and thinner.
(32) Buffalo base.
(34) 9.60c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) Chicago base, 10 points lower.
(38) 13 Ga. & lighter; 60" & narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 0.035" and heavier, 0.25c higher.
(41) 9.10c for cut lengths.
(42) Mill lengths, f.o.b. mill; deld. in mill zone or within switching limits, 5.635c.
(43) 9-14½ Ga.
(44) To fabricators.
(48) 6-7 Ga.
(49) 3½ in. and smaller rounds, 9.65c, over 3½ in. and other shapes.

J & L Steel Service Centers—efficient and dependable. Anywhere you look—from the order department, through every processing operation, to the well-organized shipping floor like this one—you'll find something new, something better at The Department Store of Steel. Unparalleled expansion, new buildings, the latest machinery and equipment, increased stocks of steel, stainless and aluminum, and skilled warehousemen trained to give *extra* care to every order—all add up to faster, more efficient service for J & L customers.

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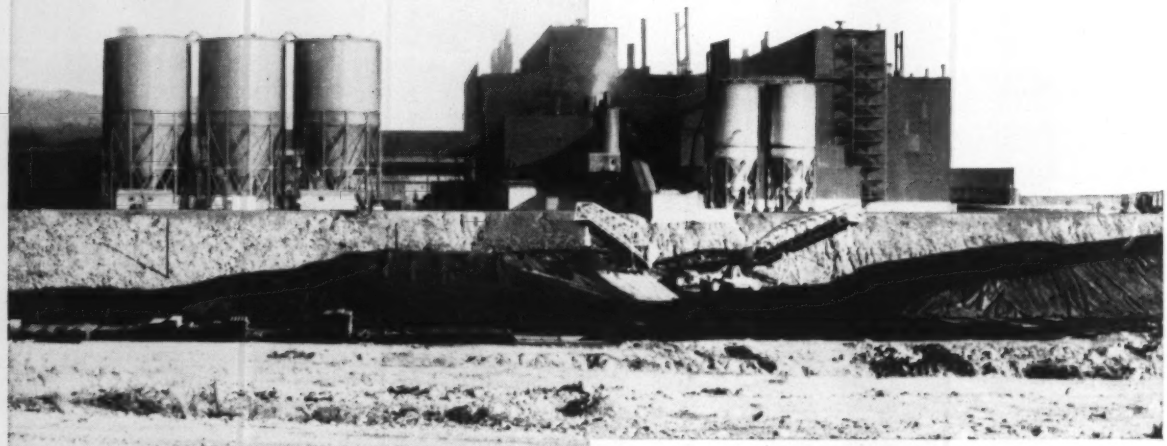
How Pneumatic Conveying Helps Make New Mining Process Economically Practical

Taconite processing is typical of the many varied, cost-saving applications for Fuller Pneumatic Conveying.

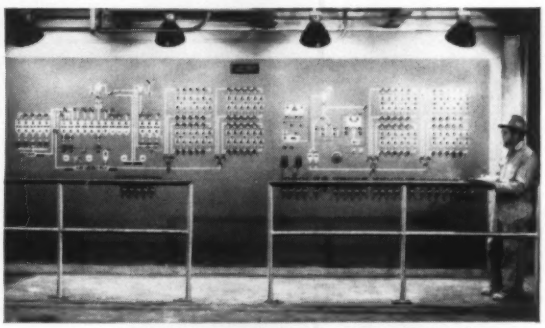
They're turning low assay iron ore into rich pellets on the Mesabi these days. Moving additives for pelletizing, Fuller plays a special role in this feat of engineering and production economy.

Fuller Pneumatic Conveying Systems are carrying fine anthracite screenings, soda ash, and bentonite from siding to storage to processing—with speed, safety, sanitation, and efficiency. With few moving parts to wear out and powered by inexpensive low-pressure air, Fuller Pneumatic Conveying Systems speed dry bulk materials *anywhere that a pipeline can be run:* under ground, up through floors, around corners . . . for far greater distances and at substantially lower cost than possible with mechanical conveyors.



Four Fuller Pneumatic Systems can speed more than 307 long *tons* of additives through this huge Taconite Pelletizing Plant in a single day.

Fuller Pneumatics Can Work For You, Too—as easily and profitably as it does in a score of industries from baking to mining to paper. If you move dry bulk materials, write today and learn how you can move further—for less—with air.



Centralized control is provided by giant panel designed and manufactured by Fuller.

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160 Bridge St., Catasauqua, Pa.
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Offices in Principal Cities Throughout the World

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....pioneers in harnessing AIR

2097
G229

SEAMLESS STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	2		2½		3		3½		4		5		6	
List Per Ft	37c		58.5c		76.5c		92c		$1.09		$1.48		$1.92	
Pounds Per Ft	3.68		5.82		7.62		9.20		10.89		14.81		19.18	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	+12.25	+28.75	+5.75	+23.5	+3.25	+21	+1.75	+19.5	+1.75	+19.5	+2	+19.75	0.5	+17.25
Ambridge, Pa. N2	+12.25	....	+5.75	....	+3.25	....	+1.75	....	+1.75	....	+2	....	0.5	....
Lorain, O. N3	+12.25	+28.75	+5.75	+23.5	+3.25	+21	+1.75	+19.5	+1.75	+19.5	+2	+19.75	0.5	+17.25
Youngstown Y1	+12.25	+28.75	+5.75	+23.5	+3.25	+21	+1.75	+19.5	+1.75	+19.5	+2	+19.75	0.5	+17.25

ELECTRICWELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Youngstown R2	+12.25	+28.75	+5.75	+23.5	+3.25	+21	+1.75	+19.5	+1.75	+19.5	+2	+19.75	0.5	+17.25

BUTTWELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	⅛		¼		⅜		½		¾		1		1¼	
List Per Ft	5.5c		6c		6c		8.5c		11.5c		17c		23c	
Pounds Per Ft	0.24		0.42		0.57		0.85		1.13		1.68		2.28	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	....	....	....	....	....	....	2.25	+15	5.25	+11	8.75	+6.5	11.25	+5.25
Alton, Ill. L1	....	....	....	....	....	....	0.25	+17	3.25	+13	6.75	+8.5	9.25	+7.25
Benwood, W. Va. W10	1.5	+27	+10.5	+36	+21	+45.5	2.25	+15	5.25	+11	8.75	+6.5	11.25	+5.25
Butler, Pa. F6	4.5	+24	+8.5	+34	+19.5	+44	....	....	....	....	....	....	....	....
Etna, Pa. N2	....	....	....	....	....	....	2.25	+15	5.25	+11	8.75	+6.5	11.25	+5.25
Fairless, Pa. N3	....	....	....	....	....	....	0.25	+17	3.25	+13	6.75	+8.5	9.25	+7.25
Fontana, Calif. K1	....	....	....	....	....	....	+10.75	+28	+7.75	+24	+4.25	+19.5	+1.75	+18.25
Indiana Harbor, Ind. Y1	....	....	....	....	....	....	1.25	+16	4.25	+12	7.75	+7.5	10.25	+7.75
Lorain, O. N3	....	....	....	....	....	....	2.25	+15	5.25	+11	8.75	+6.5	11.25	+5.25
Sharon, Pa. S4	4.5	+24	+8.5	+34	+19.5	+44	....	....	....	....	....	....	....	....
Sharon, Pa. M6	....	....	....	....	....	....	2.25	+15	5.25	+11	8.75	+6.5	11.25	+5.25
Sparrows Pt., Md. B2	2.5	+26	+10.5	+36	+21.5	+46	0.25	+17	3.25	+13	6.75	+8.5	9.25	+7.25
Wheatland, Pa. W9	4.5	+24	+8.5	+34	+19.5	+44	2.25	+15	5.25	+11	8.75	+6.5	11.25	+5.25
Youngstown R2, Y1	....	....	....	....	....	....	2.25	+15	5.25	+11	8.75	+6.5	11.25	+5.25

Size—Inches	1½		2		2½		3		3½		4	
List Per Ft	27.5c		37c		58.5c		76.5c		92c		$1.09	
Pounds Per Ft	2.72		3.68		5.82		7.62		9.20		10.89	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	11.75	+4.25	12.25	+3.75	13.75	+3.5	13.75	+3.5	3.25	+14.5	3.25	+14.5
Alton, Ill. L1	9.75	+6.25	10.25	+5.75	11.75	+5.5	11.75	+5.5	1.25	+16.5	1.25	+16.5
Benwood, W. Va. W10	11.75	+4.25	12.25	+3.75	13.75	+3.5	13.75	+3.5	3.25	+14.5	3.25	+14.5
Etna, Pa. N2	11.75	+4.25	12.25	+3.75	13.75	+3.5	13.75	+3.5	3.25	+14.5	3.25	+14.5
Fairless, Pa. N3	9.75	+6.25	10.25	+5.75	11.75	+5.5	11.75	+6.5	1.25	+16.5	1.25	+16.5
Fontana, Calif. K1	+1.25	+17.25	+0.75	+16.75	0.75	+16.5	0.75	+16.5	+9.75	+27.5	+9.75	+27.5
Indiana Harbor, Ind. Y1	10.75	+5.25	11.25	+4.75	12.75	+4.5	12.75	+4.5	2.25	+15.5	2.25	+15.5
Lorain, O. N3	11.75	+4.25	12.25	+3.75	13.75	+3.5	13.75	+3.5	....	....	....	....
Sharon, Pa. M6	11.75	+4.25	12.25	+3.75	13.75	+3.5	13.75	+3.5	....	....	....	....
Sparrows Pt., Md. B2	9.75	+6.25	10.25	+5.75	11.75	+5.5	11.75	+5.5	1.25	+16.5	1.25	+16.5
Wheatland, Pa. W9	11.75	+4.25	12.25	+3.75	13.75	+3.5	13.75	+3.5	3.25	+14.5	3.25	+14.5
Youngstown R2, Y1	11.75	+4.25	12.25	+3.75	13.75	+3.5	13.75	+3.5	3.25	+14.5	3.25	+14.5

*Galvanized pipe discounts based on price of zinc at 12.50c, East St. Louis.

Stainless Steel

Representative prices, cents per pound; subject to current lists of extras

AISI Type	Rerolling Ingot	Rerolling Slabs	Forging Billets	H.R. Strip	H.R. Rods; C.F. Wire	Bars; Structural Shapes	Plates	Sheets	C.R. Strip; Flat Wire
201	22.75	25.00	....	36.00	....	43.50	39.25	48.50	45.00
202	24.75	28.25	37.75	39.00	42.25	44.50	40.00	49.25	49.25
301	24.00	26.00	38.75	37.25	43.50	46.00	41.25	51.25	47.50
302	26.25	29.50	39.50	40.50	44.25	46.75	42.25	52.00	52.00
302B	26.50	30.75	42.25	45.75	46.75	49.00	44.50	57.00	57.00
303	....	33.25	42.50	....	47.25	49.75	45.00	56.75	56.75
304	28.00	31.25	42.00	43.75	47.00	49.50	45.75	55.00	55.00
304L	....	....	49.75	51.50	54.75	57.25	53.50	62.75	62.75
305	29.50	34.75	44.00	47.50	47.00	49.50	46.25	58.75	58.75
308	32.00	36.25	49.00	50.25	54.75	57.75	55.25	63.00	63.00
309	41.25	47.50	60.00	64.50	66.25	69.50	66.00	80.50	80.50
310	51.50	59.50	81.00	84.25	89.75	94.50	87.75	96.75	96.75
314	....	....	80.50	....	89.75	94.50	87.75	....	104.25
316	41.25	47.50	64.50	68.50	71.25	75.75	71.75	80.75	80.75
316L	....	....	72.25	76.25	79.50	83.50	79.50	88.50	88.50
317	49.75	58.00	79.75	88.25	89.50	94.25	88.50	101.00	101.00
321	33.50	38.00	48.75	53.50	54.50	57.50	54.75	65.00	65.50
330	....	....	123.25	....	113.00	143.75	135.00	149.25	149.25
18-8 CbTa	38.50	48.25	57.75	63.50	63.75	67.25	64.75	79.25	79.25
403	....	....	29.25	....	33.25	35.00	30.00	40.25	40.25
405	20.25	26.50	30.75	36.00	34.75	36.50	32.50	46.75	46.75
410	17.50	19.50	29.25	31.00	33.25	35.00	30.00	40.25	40.25
416	....	....	29.75	....	33.75	35.50	31.25	48.25	48.25
420	....	31.50	35.50	41.75	40.75	42.75	40.25	62.00	62.00
430	17.75	19.75	29.75	32.00	33.75	35.50	31.00	40.75	40.75
430F	....	....	30.50	....	34.25	36.00	31.75	51.75	51.75
431	....	29.75	39.25	....	43.50	46.00	41.00	56.00	56.00
446	....	....	40.75	59.00	46.00	48.25	42.75	70.00	70.00

Producers Are: Allegheny Ludlum Steel Corp.; American Steel & Wire Div., U. S. Steel Corp.; Anchor Drawn Steel Co., division of Vanadium-Alloys Steel Co.; Armco Steel Corp.; Babcock & Wilcox Co.; Bethlehem Steel Co.; J. Bishop & Co.; A. M. Byers Co.; Calstrip Steel Corp.; G. O. Carlson Inc.; Carpenter Steel Co.; Carpenter Steel Co. of New England; Charter Wire Products; Crucible Steel Co. of America; Damascus Tube Co.; Dearborn Div., Sharon Steel Corp.; Wilbur B. Driver Co.; Driver-Harris Co.; Eastern Stainless Steel Corp.; Firth Sterling Inc.; Fort Wayne Metals Inc.; Green River Steel Corp., subsidiary of Jessop Steel Co.; Indiana Steel & Wire Co.; Ingersoll Steel Div., Borg-Warner Corp.; Ellwood Ivins Steel Tube Works Inc.; Jessop Steel Co.; Johnson Steel & Wire Co. Inc.; Stainless & Strip Div., Jones & Laughlin Steel Corp.; Joslyn Stainless Steels, division of Joslyn Mfg. & Supply Co.; Latrobe Steel Co.; Lukens Steel Co.; Maryland Fine & Specialty Wire Co. Inc.; McLouth Steel Corp.; Metal Forming Corp.; Midvale-Heppenstall Co.; National Standard Co.; National Tube Div., U. S. Steel Corp.; Pacific Tube Co.; Page Steel & Wire Div., American Chain & Cable Co. Inc.; Pittsburgh Rolling Mills Inc.; Republic Steel Corp.; Riverside-Alloy Metal Div., H. K. Porter Company Inc.; Rodney Metals Inc.; Sawhill Tubular Products Inc.; Sharon Steel Corp.; Simonds Saw & Steel Co.; Specialty Wire Co. Inc.; Standard Tube Co.; Superior Steel Div., Copperweld Steel Co.; Superior Tube Co.; Swepco Tube Corp.; Techalloy Co. Inc.; Timken Roller Bearing Co.; Trent Tube Co., subsidiary of Crucible Steel Co. of America; Tube Methods Inc.; Ulbrich Stainless Steel Inc.; Union Steel Corp.; U. S. Steel Corp.; Universal Cyclops Steel Corp.; Vanadium-Alloys Steel Co.; Wall Tube & Metal Products Co.; Wallingford Steel, subsidiary Allegheny Ludlum Steel Corp.; Washington Steel Corp.; Seymour Mfg. Co.

Clad Steel

	Plates: Carbon Base 5%	10%	15%	20%	Sheets: Carbon Base 20%
Stainless					
302	....	....	....	....	37.50
304	26.05	28.80	31.55	34.30	39.75
304L	30.50	33.75	36.95	40.15	....
316	38.20	42.20	46.25	50.25	58.25
316L	42.30	46.75	51.20	55.65	....
316 Cb	49.90	55.15	60.40	65.65	....
321	31.20	34.50	37.75	41.05	47.25
347	36.90	40.80	44.65	48.55	57.00
405	22.25	24.60	26.90	29.25	....
410	20.55	22.70	24.85	27.00	....
430	21.20	23.45	25.65	27.90	....
Inconel	48.90	59.55	70.15	80.55	....
Nickel	41.65	51.95	63.30	72.70	....
Nickel, Low Carbon	41.95	52.60	63.30	74.15	....
Monel	43.35	53.55	63.80	74.05	....

	Strip, Carbon Base—Cold Rolled— 10%	Both Sides
Copper*	$36.80	$44.20

*Deoxidized. Production points: Stainless-clad sheets, New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C22, Coatesville, Pa. L7, New Castle, Ind. I-4, and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; copper-clad strip, Carnegie, Pa. S18.

Tool Steel

Grade	$ per lb	Grade	$ per lb
Reg. Carbon (W-1)	0.330	V-Cr Hot Work (H-13)	0.550
Spec. Carbon (W-1)	0.385	W-Cr Hot Work (H-12)	0.530
Oil Hardening (O-1)	0.505	W Hot Wk. (H-21)	1.425-1.44
V-Cr Hot Work (H-11)	0.505	Hi-Carbon-Cr (D-11)	0.955

Grade by Analysis (%) W	Cr	V	Co	Mo	AISI Designation	$ per lb
18	4	1	....	...	T-1	1.840
18	4	2	....	...	T-2	2.005
13.5	4	3	....	...	T-3	2.105
18.25	4.25	1	4.75	...	T-4	2.545
18	4	2	9	...	T-5	2.915
20.25	4.25	1.6	12.95	...	T-6	4.330
13.75	3.75	2	5	...	T-8	2.485
1.5	4	1	....	8.5	M-1	1.200
6.4	4.5	1.9	....	5	M-2	1.345
6	4	3	....	6	M-3	1.590

Tool steel producers include: A4, A8, B2, B8, C4, C9, C12, C18, F2, J3, L3, M14, S8, U4, V2, and V3.

Pig Iron

F.o.b. furnace prices in dollars per gross ton, as reported to STEEL. Minimum delivered prices are approximate.

	Basic	No. 2 Foundry	Malle-able	Besse-mer
Birmingham District				
Birmingham R2	62.00	62.50**	....	....
Birmingham U6	....	62.50**	66.50	....
Woodward, Ala. W15	62.00*	62.50**	66.50	....
Cincinnati, deld.	....	70.20	....	....
Buffalo District				
Buffalo H1, R2	66.00	66.50	67.00	67.50
N. Tonawanda, N.Y. T9	....	66.50	67.00	67.50
Tonawanda, N.Y. W12	66.00	66.50	67.00	67.50
Boston, deld.	77.29	77.79	78.29	....
Rochester, N.Y., deld.	69.02	69.52	70.02	....
Syracuse, N.Y., deld.	70.12	70.62	71.12	....
Chicago District				
Chicago I-3	66.00	66.50	66.50	67.00
S. Chicago, Ill. R2	66.00	66.50	66.50	67.00
S. Chicago, Ill. W14	66.00	....	66.50	67.00
Milwaukee, deld.	69.02	69.52	69.52	70.02
Muskegon, Mich., deld.	....	74.52	74.52	....
Cleveland District				
Cleveland R2, A7	66.00	66.50	66.50	67.00
Akron, Ohio, deld.	69.52	70.02	70.02	70.52
Mid-Atlantic District				
Birdsboro, Pa. B10	68.00	68.50	69.00	69.50
Chester, Pa. P4	68.00	68.50	69.00	....
Swedeland, Pa. A3	68.00	68.50	69.00	69.50
New York, deld.	....	75.50	76.00	....
Newark, N.J., deld.	72.69	73.19	73.69	74.19
Philadelphia, deld.	70.41	70.91	71.41	71.99
Troy, N.Y. R2	68.00	68.50	69.00	69.50
Pittsburgh District				
Neville Island, Pa. P6	66.00	66.50	66.50	67.00
Pittsburgh (N&S sides), Aliquippa, deld.	....	67.95	67.95	68.48
McKees Rocks, Pa., deld.	....	67.60	67.60	68.13
Lawrenceville, Homestead, Wilmerding, Monaca, Pa., deld.	....	68.26	68.26	69.79
Verona, Trafford, Pa., deld.	68.29	68.82	68.82	69.35
Brackenridge, Pa., deld.	68.60	69.10	69.10	69.63
Midland, Pa. C18	66.00	....	....	....
Youngstown District				
Hubbard, Ohio Y1	....	....	66.50	....
Sharpsville, Pa. S6	66.00	....	66.50	67.00
Youngstown Y1	....	....	66.50	....
Mansfield, Ohio, deld.	71.30	....	71.80	72.30
Duluth I-3	66.00	66.50	66.50	67.00
Erie, Pa. I-3	66.00	66.50	66.50	67.00
Everett, Mass. E1	67.50	68.00	68.50	....
Fontana, Calif. K1	75.00	75.50	....	....
Geneva, Utah C11	66.00	66.50	....	....
Granite City, Ill. G4	67.90	68.40	68.90	....
Ironton, Utah C11	66.00	66.50	....	....
Minnequa, Colo. C10	68.00	68.50	69.00	....
Rockwood, Tenn. T3	....	62.50‡	66.50	....
Toledo, Ohio I-3	66.00	66.50	66.50	67.00
Cincinnati, deld.	72.94	73.44	....	....

*Phos. 0.70-0.90%; Phos. 0.30-0.69%, $63.
**Phos. 0.70-0.90%; Phos. 0.30-0.69%, $63.50.
‡Phos. 0.50% up; Phos. 0.30-0.49%, $63.50.

PIG IRON DIFFERENTIALS

Silicon: Add 75 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos. iron on which base is 1.75-2.00%.

Manganese: Add 50 cents per ton for each 0.25% manganese over 1% or portion thereof.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.01-6.50% silicon; add 75c for each 0.50% silicon or portion thereof over the base grade within a range of 6.50 to 11.50%; starting with silicon over 11.50% add $1.50 per ton for each 0.50% silicon or portion thereof up to 14%; add $1 for each 0.50% Mn over 1%)

Jackson, Ohio I-3, J1	$78.00
Buffalo H1	79.25

ELECTRIC FURNACE SILVERY IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1.25 for each 0.50% Mn over 1%; $2 per gross ton premium for 0.045% max P)

Calvert City, Ky. P15	$99.00
Niagara Falls, N.Y. P15	99.00
Keokuk, Iowa Open-hearth & Fdry, K2	89.00
Keokuk, Iowa O.H. & Fdry, 12½ lb piglets, 16% Si, K2	92.00

LOW PHOSPHORUS PIG IRON, Gross Ton

Lyles, Tenn. T3 (Phos. 0.035% max)	$73.00
Rockwood, Tenn. T3 (Phos. 0.035% max)	73.00
Troy, N.Y. R2 (Phos. 0.075% max)	73.00
Swedeland, Pa. A3 (Intermediate) (Phos. 0.036-0.075% max)	73.00
Cleveland A7 (Intermediate) (Phos. 0.036-0.075% max)	71.00
Duluth I-3 (Intermediate) (Phos. 0.036-0.075%)	71.00
Erie, Pa. I-3 (Intermediate) (Phos. 0.036-0.075% max)	71.00
Neville Island, Pa. P6 (Intermediate) (Phos. 0.036-0.075% max)	71.00

Steel Service Center Products

Representative prices, per pound, subject to extras, f.o.b. warehouse. City delivery charges are 15 cents per 100 lb except: Denver, Moline, Norfolk, Richmond, Washington, 20 cents; Baltimore, Boston, Los Angeles, New York, Philadelphia, Portland, Spokane, San Francisco, 10 cents; Atlanta, Birmingham, Chattanooga, Houston, Seattle, no charge.

	SHEETS				STRIP	BARS			Standard Structural Shapes	PLATES	
	Hot-Rolled	Cold-Rolled	Galv. 10 Ga.†	Stainless Type 302	Hot-Rolled*	H.R. Rounds	C.F. Rds.‡	H.R. Alloy 4140††[5]		Carbon	Floor
Atlanta	8.59§	9.86§	10.13	....	8.91	9.39	13.24#	....	9.40	9.29	11.21
Baltimore	9.80[a]	10.00[b]	10.06	....	11.45[c]	10.05[d]	11.80#	16.38	9.55	9.90[e]	10.50
Birmingham	9.43[a]	10.20[b]	....	....	10.91[c]	9.59[d]	13.14#	16.76	9.00	9.79[e]	10.90
Boston	10.07	11.42	11.77	53.50	12.17	10.19	13.30#	15.64	10.64	10.27	11.95
Buffalo	8.40	9.60	11.25	55.98	8.75	9.15	11.45#	15.40	9.25	9.20	10.75
Chattanooga	8.35	9.69	9.65	....	8.40	8.77	10.46	....	8.88	8.80	10.66
Chicago	8.25	9.45	10.90	53.00	8.51	8.99	9.15	15.05	9.00	8.89	10.20
Cincinnati	8.43	9.51	10.95	53.43	8.83	9.31	11.58#	15.37	9.56	9.27	10.53
Cleveland	8.54[a]	8.79[b]	10.94	52.33	10.32[c]	8.75[d]	11.25#	15.16	9.39	8.71[e]	10.50[f]
Dallas	8.80	9.30	....	....	8.85	8.80	....	....	8.75	9.15	10.40
Denver	9.40	11.84	12.94	....	9.43	9.80	11.19	....	9.84	9.76	11.08
Detroit	8.51	9.71	11.25	56.50	8.88	9.30	9.51	15.33	9.56	9.26	10.46
Erie, Pa.	8.35	9.45	9.95[10]	....	8.60	9.10	11.25	....	9.35	9.10	10.60
Houston	9.65[a]	9.65[b]	....	52.00	10.85[c]	8.90[d]	13.10#	16.55	8.35	9.65[e]	10.10
Jackson, Miss.	8.52	9.79	....	....	8.84	9.82	10.68	....	9.33	9.22	11.03
Los Angeles	8.70[2]	10.82[2]	12.20	57.60	9.15	9.10[2]	12.95[2]	16.35	9.00[2]	9.10[2]	11.30[2]
Memphis, Tenn.	8.59	9.80	....	....	8.84	9.32	11.25#	....	9.33	9.22	10.86
Milwaukee	8.39	9.59	11.04	....	8.65	9.13	9.39	15.19	9.22	9.03	10.34
Moline, Ill.	8.55	9.80	....	....	8.84	8.95	9.15	....	8.99	8.91	....
New York	9.17	10.49	11.35	53.08	9.64	9.99	13.25#	15.50	9.74	9.77	11.05
Norfolk, Va.	8.65	....	....	....	9.15	9.30	12.75	....	9.65	9.10	10.50
Philadelphia	8.20	9.55	10.89	52.17	9.25	9.40	11.95#	15.48	9.10	9.15	10.40**
Pittsburgh	8.54[a]	8.79[b]	10.76	52.33	10.30[c]	8.64[d]	11.25#	15.05	9.00	8.47[e]	10.26[f]
Richmond, Va.	8.65	....	10.79	....	9.15	9.55	....	....	9.65	9.10	10.60
St. Louis	8.63	9.83	11.28	....	8.89	9.37	9.78	15.43	9.48	9.27	10.58
St. Paul	8.80[a]	9.31[b]	10.54	....	10.32[c]	8.70[d]	11.49#	16.54	9.38	8.60[e]	10.49
San Francisco	9.65	11.10	11.40	55.10	9.75	10.15	13.60	16.25	9.85	10.00	12.35
Seattle	10.30	11.55	12.50	56.52	10.25	10.50	14.70	16.80[2]	10.20	10.10	12.50
South'ton, Conn.	9.07	10.33	10.71	....	9.48	9.74	....	....	9.57	9.57	10.91
Spokane	10.30	11.55	12.50	57.38	10.75	11.00	14.70	16.80	10.20	10.10	13.00
Washington	9.15	....	....	....	9.65	10.05	12.50	....	10.15	9.60	11.10

*Prices do not include gage extras; †prices include gage and coating extras; ‡includes 35-cent bar quality extras; §42 in. and under; **¼ in. and heavier; ††as annealed; ‡‡⅝ in. to 4 in. wide, inclusive; #net price, 1 in. round C-1018.

[a]10 Ga.; [b]20 Ga.; [c]⅛ x 1 in.; [d]⅝-2⅛ in.; [e]¼ x 84 in.; [f]¼ x 36 in.

Base quantities, 2000 to 4999 lb except as noted; cold-finished bars, 2000 lb and over except in Seattle, 2000 to 3999 lb; stainless sheets, 8000 lb except in Chicago, New York, Boston, Seattle, 10,000 lb and in San Francisco, 2000 to 4999 lb; hot-rolled products on West Coast, 2000 to 9999 lb, except in Seattle, 30,000 lb and over; [2]—30,000 lb; [3]—1000 to 4999 lb; [5]—1000 to 1999 lb; [10]—2000 lb and over.

Refractories

Fire Clay Brick (per 1000 pieces*)

High-Heat Duty: Ashland, Grahn, Hayward, Hitchens, Haldeman, Olive Hill, Ky., Athens, Troup, Tex., Beech Creek, Clearfield, Curwensville, Lock Haven, Lumber, Orviston, West Decatur, Winburne, Snow Shoe, Pa., Bessemer, Ala., Farber, Mexico, St. Louis, Vandalia, Mo., Ironton, Oak Hill, Parrall, Portsmouth, Ohio, Ottawa, Ill., Stevens Pottery, Ga., Canon City, Colo., $140; Salina, Pa., $145; Niles, Ohio, $138; Cutler, Utah, $175.

Super-Duty: Ironton, Ohio, Vandalia, Mo., Olive Hill, Ky., Clearfield, Salina, Winburne, Snow Shoe, Pa., New Savage, Md., St. Louis, $185; Stevens Pottery, Ga., $195; Cutler, Utah, $248.

Silica Brick (per 1000 pieces*)

Standard: Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Pt. Matilda, Pa., Portsmouth, Ohio, Hawstone, Pa., St. Louis, $158; Warren, Niles, Windham, Ohio, Hays, Latrobe, Morrisville, Pa., $163; E. Chicago, Ind., Joliet, Rockdale, Ill., $168; Canon City, Colo., $173; Lehi, Utah, $183; Los Angeles, $185.

Super-Duty: Sproul, Hawstone, Pa., Niles, Warren, Windham, Ohio, Leslie, Md., Athens, Tex., $158; Morrisville, Hays, Latrobe, Pa., $163; E. Chicago, Ind., St. Louis, $168; Canon City, Colo., $183; Curtner, Calif., $185.

Semisilica Brick (per 1000 pieces*)

Woodbridge, N. J., Canon City, Colo., $140; Philadelphia, Clearfield, Pa., $145.

Ladle Brick (per 1000 pieces*)

Dry Pressed: Alsey, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill Station, Vanport, Pa., Mexico, Vandalia, Mo., Wellsville, Irondale, New Salisbury, Ohio, $96.75; Clearfield, Pa., Portsmouth, Ohio, $102.

High-Alumina Brick (per 1000 pieces*)

50 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., Danville, Ill., $253; Philadelphia, $265; Clearfield, Pa., $230; Orviston, Snow Shoe, Pa., $260.

60 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $310; Danville, Ill., $313; Clearfield, Orviston, Snow Shoe, Pa., $320; Philadelphia, $325.

70 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $350; Danville, Ill., $353; Clearfield, Orviston, Snow Shoe, Pa., $360; Philadelphia, $365.

Sleeves (per 1000)

Reesdale, Johnstown, Bridgeburg, St. Charles, Pa., St. Louis, $188; Ottawa, Ill., $205.

Nozzles (per 1000)

Reesdale, Johnstown, Bridgeburg, St. Charles, Pa., St. Louis, $310.

Runners (per 1000)

Reesdale, Johnstown, Bridgeburg, St. Charles, Pa., $234.

Dolomite (per net ton)

Domestic, dead-burned, bulk, Billmeyer, Blue Bell, Williams, Plymouth Meeting, York, Pa., Millville, W. Va., Bettsville, Millersville, Martin, Woodville, Gibsonburg, Narlo, Ohio, $16.75; Thornton, McCook, Ill., $17; Dolly Siding, Bonne Terre, Mo., $15.60.

Magnesite (per net ton)

Domestic, dead-burned, ½ in. grains with fines: Chewelah, Wash., Luning, Nev., $46; ¾ in. grains with fines: Baltimore, $73.

*—9 in. x 4½ x 2.50 straights.

Fluorspar

Metallurgical grades, f.o.b. shipping point in Ill., Ky., net tons, carloads, effective CaF_2 content 72.5%, $37-$41; 70%, $36-$40; 60%, $33-$36.50. Imported, net ton, f.o.b. cars point of entry, duty paid, metallurgical grade; European, $30-$33, contract; Mexican, all rail, duty paid $26.50-$27; barge, Brownsville, Tex., $29-$29.50.

Ores

Lake Superior Iron Ore

(Prices effective at start of the 1959 shipping season, subject to later revision, gross ton, 51.50% iron natural, rail of vessel, lower lake ports.)

Mesabi bessemer	$11.60
Mesabi nonbessemer	11.45
Old Range bessemer	11.85
Old Range nonbessemer	11.70
Open-hearth lump	12.70
High phos	11.45

The foregoing prices are based on upper lake rail freight rates, lake vessel freight rates, handling and unloading charges, and taxes thereon, which were in effect Jan. 1, 1959, and increases or decreases after that date are absorbed by the seller.

Eastern Local Iron Ore

Cents per unit, deld. E. Pa.

New Jersey, concentrates	nom.

Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 65%	21.00†
Brazilian iron ore, 68.5%	21.00

Tungsten Ore

Net ton, unit

Foreign wolframite, good commercial quality	$17.50-18.00*
Domestic, concentrates, f.o.b. milling points	22.00-23.00

*Before duty. †Nominal.

Manganese Ore

Mn 46-48%, Indian 88-90c, nom. per long ton unit, c.i.f. U. S. ports, duty for buyer's account.

Chrome Ore

Gross ton, f.o.b. cars New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., Tacoma, Wash.

Indian and Rhodesian

48% 3:1	$34.00-35.00†
48% no ratio	25.00-26.00†

South African Transvaal

44% no ratio	18.00†
48% no ratio	24.00-26.00†

Turkish

48% 3:1	36.00-37.00†

Domestic

Rail nearest seller

18% 3:1	30.00

Molybdenum

Sulfide concentrate, per lb of Mo content, mines, unpacked	$1.23

Antimony Ore

Per short ton unit of Sb content, c.i.f. seaboard

50-55%	$2.35-2.50
60-65%	2.60-3.20

Vanadium Ore

Cents per lb V_2O_5

Domestic	31.00

†Nominal.

Canadian Steel

(Cents per pound, f.o.b. mill, except as otherwise noted)

Billets, Blooms & Slabs:	
Carbon, Forging Quality (net ton)	$97.00
Alloy (net ton)	115.00
Wire Rods:	
Carbon, 7/32" to under ¼ in.	5.30
Carbon, ¼ in. to 47/64 in.	5.70
Alloy	6.40
Wire (carload lots)	8.40
Bars & Small Shapes:	
Carbon, merchant quality	5.40
Carbon, special quality	5.85
Alloy	6.40
Bar Mill Bands:	
Carbon	5.40
Alloy	8.05
Structural Size Angles & Zees	5.40
Plates:	
Carbon	5.45
Sheets & Coils, Hot Rolled:	
Carbon Sheets	5.00
Carbon Strip	5.00
Sheets & Coils, Cold Rolled:	
Carbon Sheets	6.35
Carbon Strip (0.080 and lighter)	6.35
Carbon Strip (0.081 and heavier)	6.65
Sheets & Coils, Galvanized:	
Standard Quality	6.70
Culvert Quality	7.00
Sheets, Porcelain Enameling	7.45
Sheets & Coils, Electrical:	
Field Grade	9.00
Armature Grade	9.50
Electrical Grade	10.15
Tin Mill Products (Per Base Box; 100 lb basis wt)	
Coke Tin Plate (1.25 lb pot yield)	$10.60
Electrolytic Tin Plate (0.25 lb coating)	9.10
Black Plate	8.30
Nails, c.l. lots, 400 keg min. (per keg)	$8.15

Metal Powder

(Per pound, f.o.b. shipping point in ton lots for minus 100 mesh, except as noted)

	Cents
Sponge Iron, domestic and foreign, 98% Fe, min. truckiots, freight allowed east of Mississippi River:	
100 mesh, bags	11.50
100 mesh, pails	9.85‡
40 mesh, bags	8.10††
Electrolytic Iron, Melting stock, 99.87% Fe, irreg. fragments, ⅛ in. x 1.3 in.	28.75
(In contract lots of 240 tons price is 22.75c)	
Annealed, 99.5% Fe	36.75
Unannealed (99+% Fe)	33.25
Unannealed (99+% Fe) (minus 325 mesh)	58.25
Powder Flake (minus 16 plus 100 mesh)	29.25
Carbonyl Iron:	
98.1-98.9%, 3 to 20 microns, depending on grade, 93.00-290.00 in standard 200-lb containers; all minus 200 mesh.	
Aluminum, Atomized, 500-lb drum, freight allowed, c.l. 38.50; ton lots	40.50
Antimony, 500-lb lots	42.00*
Brass, 500-lb lots	35.70-52.20†
Bronze, 5000-lb lots	53.50-57.50†
Copper, electrolytic	14.25*
Copper, reduced	14.25*
Lead	7.50*
Manganese, Electrolytic: Minus 35 mesh	$1.00
Nickel	$1.15
Nickel-Silver, 5000-lb lots	54.00-58.30†
Phosphor-Copper, 5000-lb lots	66.00
Copper (atomized) 5000-lb lots	46.50-55.00
Solder	7.00*
Silicon	70.00*
Stainless Steel, 304	89.00*
Stainless Steel, 316	$1.07
Tin	14.00*
Zinc, 5000-lb lots	20.70-33.90‡
Tungsten: Carbon reduced, 98.8% min, minus 65 mesh	Dollars nom**
Chromium electrolytic 99.8% Cr, min, metallic basis	5.00

*Plus cost of metal. †Depending on composition. ‡Depending on mesh. §Cutting and scarfing grade. **Depending on price of ore. ††Welding grade.

Metallurgical Coke

Price per net ton

Beehive Ovens	
Connellsville, Pa., furnace	$14.75-15.25
Connellsville, Pa., foundry	18.00-18.50
Oven Foundry Coke	
Birmingham, oven	$30.35
Cincinnati, deld.	33.34
Buffalo, ovens	32.00
Detroit, ovens	32.00
Pontiac, Mich., deld.	33.95
Saginaw, Mich., deld.	35.53
Erie, Pa., ovens	32.00
Everett, Mass., ovens: New England, deld.	33.55*
Indianapolis, ovens	31.25
Ironton, Ohio, ovens	30.50
Cincinnati, deld.	33.54
Kearny, N. J., ovens	31.25
Milwaukee, ovens	32.00
Neville Island (Pittsburgh), Pa., ovens	30.75
Painesville, Ohio, ovens	32.00
Cleveland, deld.	34.19
Philadelphia, ovens	31.00
St. Louis, ovens	33.00
St. Paul, ovens	31.25
Chicago, deld.	34.68
Swedeland, Pa., ovens	31.00
Terre Haute, Ind., ovens	31.25

*Within $5.15 freight zone from works.

Imported Steel

(Base per 100 lb, landed, duty paid; based on current ocean rates with any rise for buyer's acc't. Source of shipment: Western Europe)

	North Atlantic	Great Lakes*	South Atlantic	Gulf Coast	West Coast
Deformed Bars, Intermediate, ASTM-A 305	$6.75	....	$6.70	$6.60	$7.06
Bar Size Angles	6.45	....	6.40	6.30	6.76
Structural Angles	6.35	....	6.30	6.20	6.66
I-Beams	6.35	....	6.30	6.20	6.66
Channels	6.35	....	6.30	6.20	6.66
Plates (basic bessemer)	6.60	....	6.65	6.55	6.95
Sheets, H.R.	9.50	....	9.45	9.35	9.75
Sheets, Galvanized, 20 Ga., 36 in. x 96 in.	11.00	....	10.95	10.85	11.25
Sheets, Galv. (in coils) 20 Ga., 48 in. wide	11.00	....	10.95	10.81	11.25
Sheets, C.R. (drawing quality)	12.00	....	11.95	11.85	12.25
Furring Channels, C.R., 1000 ft, ¾ x 0.30 lb per ft	26.00	....	25.74	25.50	27.12
Barbed Wire (†)	8.25	....	8.20	8.10	8.50
Merchant Bars	6.45	....	6.40	6.30	6.76
Hot-Rolled Bands	9.50	....	9.45	9.35	9.75
Wire Rods, Thomas Commercial No. 5	6.60	....	6.45	6.45	6.70
Wire Rods, O. H.	7.05	....	6.90	6.90	7.15
Bright Common Wire Nails (‡)	8.25	....	8.20	8.10	8.50

*Books closed for 1959-60 shipping season. †Per 82 lb net reel. ‡Per 100-lb keg. 20d nails and heavier.

Coal Chemicals

(Representative prices)

Cents per gal f.o.b. tank cars or tank trucks, plant.

Pure benzene	31.00
Xylene, industrial grade	29.00
Creosote	24.00
Naphthalene, 78 deg.	5.00
Toluene, one deg (deld. east of Rockies)	25.00

Cents per lb, f.o.b. tank cars or tank trucks, deld.

Phenol, 90 per cent grade	14.75

Per net ton bulk, f.o.b. cars or trucks, plant

Ammonium sulfate, regular grade	$32.00

Ferroalloys

MANGANESE ALLOYS

Spiegeleisen: Carlot, per gross ton, Palmerton, Neville Island, Pa. 21-23% Mn, $105; 19-21% Mn, 1-3% Si, $102.50; 16-19% Mn, $100.50.

Standard Ferromanganese: (Mn 74-76%, C 7% approx) base price per net ton, $245, Johnstown, Duquesne, Sheridan, Neville Island, Pa.; Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. Add or subtract $2 for each 1% or fraction thereof of contained manganese over 76% or under 74%, respectively (Mn 79-81%). Lump $253 per net ton, f.o.b. Anaconda or Great Falls, Mont. Add $2.60 for each 1% above 81%; subtract $2.60 for each 1% below 79%, fractions in proportion to nearest 0.1%.

High-Grade Low-Carbon Ferromanganese: (Mn 85-95%). Carload, lump, bulk, max 0.07% C, 35.1c per lb of contained Mn, carload packed 36.4c, ton lots 37.9c, less ton 39.1c. Delivered. Deduct 1.5c for max 0.15% C grade from above prices, 3c for max 0.03% C, 3.5c for max 0.5% C, and 6.5c for max 75% C—max 7% Si. **Special Grade:** (Mn 90% min, C 0.07% max, P 0.06% max). Add 2.05c to the above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.25-1.5%, Si 1.5% max). Carload, lump, bulk, 25.5c per lb of contained Mn; packed, carload 26.8c, ton lot 28.4c, less ton 29.6c.

Electrolytic Manganese Metal: Min carload, bulk, 34.25c; 2000 lb to min carload 37c; less ton, 39c; 50 lb cans, add 0.5c per lb. Premium for hydrogen-removed metal 0.75c per lb. Prices are f.o.b. cars, Knoxville, Tenn., freight allowed to St. Louis or any point east of Mississippi River; or f.o.b. Marietta, O., freight allowed.

Silicomanganese: (Mn 65-68%). Carload, lump, bulk, 1.50% C grade, 18.5-21% Si, 12.8c per lb of alloy. Packed, c.l. 14c, ton 14.45c, less ton 15.45c, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. For 2% C grade, Si 16-18.5%, deduct 0.2c from above prices. For 3% grade, Si 12.5-16%, deduct 0.4c from above prices. Spot, add 0.25c.

TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max, Si 4% max, C 0.10% max). Contract, ton lot, 2" x D, $1.50 per lb of contained Ti; less ton to 300 lb, $1.55. (Ti 38-43%, Al 8% max, Si 4% max, C 0.10% max). Ton lot $1.35, less ton to 300 lb $1.37, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract min c.l. $250 per ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi River and north of Baltimore and St. Louis. Spot, $255.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 2-4%). Contract, c.l. $300 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed. Spot, $305.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: C.l. lump, bulk, 28.75c per lb of contained Cr. Delivered.

Charge Chrome (C 5-8%, Si 4-7%): No. 1 (53-55% Cr) 25.00c; No. 2 (61-65% Cr) 26.00c.

Blocking Chrome (C 6% max., Si 8-12%): No. 1 (50-55% Cr) 26.00c; No. 2 (58-63% Cr) 27.00c.

Refined Charge Chrome (C 5% max., Si 2.5% max.): No. 1 (50-55% Cr) 27.50c; No. 2 (58-64% Cr) 28.50c.

Low-Carbon Ferrochrome: Cr 63-66% (Simplex), carload, lump, bulk, C 0.025% max, 36.75c per lb contained Cr; 0.010% max, 37.75c. Delivered.
Cr 67-71%, carload, lump, bulk, 0.025% max, 39.75c; 0.05% max, 39.00c; 0.10% max, 38.50c; 0.20% max. 38.25c; 0.50% max, 38.00c; 1.0% max, 37.75c; 1.5% max, 37.50c; 2.0% max, 37.25c. Delivered.

Foundry Ferrochrome, High-Carbon: (Cr 62-66%, C 5-7%, Si 7-10%). C.l., 2" x D, bulk 30.8c per lb of contained Cr. Packed, c.l. 32.4c, ton 34.2c, less ton 35.7c. Delivered. Spot, add 0.25c.

Foundry Ferrosilicon Chrome: (Cr 50-54%, Si 28-32%, C 1.25% max). SM x D, carload, bulk, 20.05c per lb of alloy, carload packed, 21.25c, ton lot 22.50c, less ton lot 23.70c. Delivered. Spot, add 0.25c.

Ferrochrome-Silicon: Cr 39-41%, Si 42-45%, C 0.05% max or Cr 33-36%, Si 45-48%, C 0.05% max. Carload, lump, bulk, 3" x down and 2" x down, 28.25c per lb contained Cr, 14.60c per lb contained Si, 0.75" x down 29.40c per lb contained Cr, 14.60c per lb contained Si.

Chromium Metal, Electrolytic: Commercial grade (C 99.8% min, metallic basis, Fe 0.2% max). Contract, carlot, packed, 2" x D plate (about ⅛" thick) $1.15 per lb, ton lot $1.17, less ton lot $1.19. Delivered. Spot, add 5c.

VANADIUM ALLOYS

Ferrovanadium: Open hearth grade (V 50-55%, Si 8% max, C 3% max). Contract, any quantity, $3.20 per lb of contained V. Delivered. Spot, add 10c. **Special Grade:** (V 50-55% or 70-75%, Si 2% max, C 0.5% max) $3.30. **High Speed Grade:** (V 50-55% or 70-75%, Si 1.50% max, C 0.20% max) $3.40.

Grainal: Vanadium Grainal No. 1 $1.05 per lb; No. 79, 50c, freight allowed.

Vanadium Oxide: Contract, less carload lot, packed, $1.38 per lb contained V_2O_5, freight allowed. Spot, add 5c.

SILICON ALLOYS

50% Ferrosilicon: Carload, lump, bulk, 14.6c per lb contained Si. Packed, c.l. 17.1c, ton lot 18.55c, less ton 20.20c, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Keokuk, Iowa; Portland, Oreg. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max). Add 1.45c to 50% ferrosilicon prices.

65% Ferrosilicon: Carload, lump, bulk, 15.75c per lb contained silicon. Packed, c.l. 17.75c, ton lot 19.55c, less ton 20.9c. Delivered. Spot, add 0.35c.

75% Ferrosilicon: Carload, lump, bulk, 16.9c per lb of contained Si. Packed, c.l. 18.8c, ton lot 20.45c, less ton 21.7c. Delivered. Spot, add 0.3c.

90% Ferrosilicon: Carload, lump, bulk, 20c per lb of contained Si. Packed, c.l. 21.65c, ton lot 23.05c, less ton 24.1c. Delivered. Spot, add 0.25c.

Silicon Metal: (98% min Si, 1.00% max Fe, 0.07% max Ca). C.l. lump, bulk, 21.5c per lb of Si. Packed, c.l. 23.15c, ton lot 24.45c, less ton 25.45c. Add 0.5c for max 0.03% Ca grade. Add 0.5c for 0.50% Fe grade analyzing 98.25% min Si.

Alsifer: (Approx 20% Al, 40% Si, 40% Fe). Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 9.85c per lb of alloy; ton lot, packed, 10.85c.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloy: (Zr 12-15%, Si 39-43%, C 0.20% max). Contract, c.l., lump, bulk, 9.25c per lb of alloy. Packed, c.l. 10.45c, ton lots 11.6c, less ton 12.45c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max). Carload, bulk 26.25c per lb of alloy, carload, lump, packed 27.25c, ton lot 28.4c, less ton 29.65c. Freight allowed. Spot, add 0.25c.

BORON ALLOYS

Ferroboron: 100 lb or more packed (B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more 1" x D, $1.20 per lb of alloy; less than 100 lb $1.30. Delivered. Spot, add 5c. F.o.b. Washington, Pa., prices, 100 lb and over are as follows: Grade A (10-14% B) 85c per lb; Grade B (14-18% B) $1.20; Grade C (19% min B) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si). Carload, bulk, lump, or 3" x D, $5.25 per lb of contained B. Packed, carload $5.40, ton to c.l. $5.50, less ton $5.60. Delivered.

Carbortam: (B 1 to 2%). Lump, carload $320 per ton, f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%). Carload, lump, bulk 23c per lb of alloy, carload packed 24.25c, ton lot 26.15c, less ton 27.15c. Delivered. Spot, add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.5-3%). Carload, lump, bulk 24c per lb of alloy, carload packed 25.65c, ton lot 27.95c, less ton 29.45c. Delivered. Spot, add 0.25c.

BRIQUETTED ALLOYS

Chromium Briquets: (Weighing approx 3½ lb each and containing 2 lb of Cr). Carload, bulk 19.60c per lb of briquet, in bags 20.70c; 3000 lb to c.l. pallets 20.80c; 2000 lb to c.l. in bags 21.90c; less than 2000 lb in bags 22.80c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx 3 lb and containing 2 lb of Mn). Carload, bulk 14.8c per lb of briquet; c.l., packed, bags 16c; 3000 lb to c.l., pallets 16c; 2000 lb to c.l., bags 17.2c; less ton 18.1c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx 3½ lb and containing 2 lb of Mn and approx ½ lb of Si). C.l. bulk 15.1c per lb of briquet; c.l. packed, bags 16.3c; 3000 lb to c.l., pallets 16.3c; 2000 lb to c.l., bags 17.5c; less ton 18.4c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx 5 lb and containing 2 lb of Si and small sizes, weighing approx 2½ lb and containing 1 lb of Si). Carload, bulk 8c per lb of briquet; packed, bags 9.2c; 3000 lb to c.l., pallets 9.6c; 2000 lb to c.l., bags 10.8c; less ton 11.7c. Delivered. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ lb of Mo each). $1.49 per lb of Mo contained, f.o.b. Langeloth, Pa.

Titanium Briquets: Ti 98.27%, $1 per lb f.o.b. Niagara Falls, N. Y.

TUNGSTEN ALLOYS

Ferrotungsten: (70-80%). 5000 lb W or more $2.15 per lb (nominal) of contained W. Delivered.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 50-60%, Si 8% max, C 0.1% max). Ton lots 2" x D, $3.45 per lb of contained Cb; less ton lots $3.50 (nominal). Delivered.

Ferrotantalum Columbium: (Cb 40% approx, Ta 20% approx, and Cb plus Ta 60% min, C 0.30% max). Ton lots 2" x D, $3.05 per lb of contained Cb plus Ta, delivered; less ton lots $3.10.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx). Carlot bulk 19.25c per lb of alloy, c.l. packed ½ in. x 12 M 20.00c, ton lot 21.15c, less ton 22.40c. Delivered. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 20c per lb of alloy, ton lot 21.15c; less ton lot 22.4c, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis.

V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed 18.45c per lb of alloy; ton lot 19.95c; less ton lot 21.20c, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis.

Simanal: (Approx 20% each Si, Mn, Al; bal Fe). Lump, carload, bulk 19.25c. Packed c.l. 20.25c, 2000 lb to c.l. 21.25c; less than 2000 lb 21.75c per lb of alloy. Delivered.

Ferrophosphorus: (23-25% based on 24% P content with unitage of $5 for each 1% of P above or below the base). Carload, bulk, f.o.b. sellers' works, Mt. Pleasant, Siglo, Tenn., $120 per gross ton.

Ferromolybdenum: (55-75%). Per lb of contained Mo in 200-lb container, f.o.b. Langeloth and Washington, Pa., $1.76 in all sizes except powdered which is $1.82.

Technical Molybdic-Oxide: Per lb of contained Mo, in cans, $1.47; in bags, $1.46, f.o.b. Langeloth and Washington, Pa.

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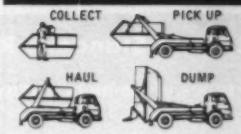

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Scrap Helped by Steel Settlement

STEEL's index on No. 1 heavy melting holds unchanged at $41.33, but market sentiment is buoyed by expectations of uninterrupted operations, active mill buying

Scrap Prices, Page 124

• **Cleveland**—Acceptance by steelworkers of terms for a new contract has infused optimism into the scrap market, but only a little buying of specialty grades in the Valley is reported. Dealers anticipate a stronger demand from the mills over coming weeks; this is reflected in a $1 advance on the steel grades here and in the Valley. Demand for busheling and bundles is better than that for the No. 1 heavy melting grade.

• **Chicago**—Settlement of the steel wage dispute has produced a bullish sentiment among scrap dealers here. They feel the material they're holding is worth more now than it was while negotiations were stalemated. Brokers do not agree, pointing out that the mills' scrap supplies are in excellent shape; consequently, they anticipate no buying rush that would cause prices to rise sharply. A gradually rising price trend is considered probable with near capacity steel production a certainty for the next six months at least.

• **Philadelphia** — Scrap prices are stronger, reflecting settlement of the steel wage dispute. The mills may resist higher prices more than ever because of higher operating costs resulting from the wage agreement. Still, indications are that more active trading is likely, and some open hearth grades of scrap have already advanced. No. 2 heavy melting is now quoted at $38, delivered, and No. 1 bundles and No. 1 busheling $47. In the cast iron grades, No. 1 cupola is off $2 a ton to $43, delivered.

• **New York**—Brokers' buying prices are unchanged, but they are stronger, and moderate increases are expected. Two results of the steel strike settlement: Domestic and foreign demand are expected to become more active, but costs of handling and preparing scrap are likely to rise.

• **Buffalo**—A large mill in this area re-entered the market last week, purchasing secondary grades of material at the same prices previously paid. It failed to take any No. 1 heavy melting grade. The buyer paid $34 for No. 2 heavy melting, and $28 for No. 2 bundles. Delivery by Jan. 15 was specified. The cast scrap market is steady, around $50 for the cupola grade. Out of district demand is providing some support.

• **Pittsburgh**—Market sentiment has strengthened in the wake of the steel labor settlement, but most observers predict that there will be no runaway. Brokers for a mill on the fringe of the district are quoting dealers the same prices that were offered last month—$42 for No. 1 heavy melting, delivered, and $37 for No. 2 heavy melting.

Major consumers who have been marking time are expected to resume buying shortly. Late developments prior to the labor contract signing included: 1. Sale of industrial bundles by Fisher Body Div. of General Motors at $48.88, f.o.b. factory, up 88 cents from last month's average price. 2. Mill purchases of No. 1 dealer bundles at $45, up $2, and No. 1 busheling at $43, up $1.

• **Cincinnati**—The market is unsettled in the wake of the steel wage settlement. Despite a bullish outlook, no new sales to test prices have been reported.

• **St. Louis**—Consumers are out of the market, mill inventories being fairly good. However, the market is denfiitely more bullish because of the settlement of the steel wage dispute. Traders think the mills shortly will begin buying volume tonnage in preparation for a long period of high level steel production. At present, prices are unchanged at levels established about two weeks ago.

• **Birmingham**—A local electric furnace operator has released shipments on scrap held up since mid-December. However, this buyer is not making his usual early-January purchases. Otherwise, the scrap market here is inactive, with foundries purchasing only enough tonnage to replace that consumed. There's no new buying for export. Prices are unchanged.

• **Houston**—There's little demand for scrap in this area. A recent purchase by the Lone Star mill for January delivery failed to put new strength into the market. Prices on the purchase were off $1.50 on No. 1 heavy melting and $2.50 on

(*Please turn to Page* 129)

Iron and Steel Scrap

Consumer prices per gross ton, except as otherwise noted, including broker's commission, as reported to STEEL, Jan. 6, 1960. *Changes shown in italics.*

STEELMAKING SCRAP COMPOSITE

Jan. 6	$41.33
Dec. 30	41.33
Dec. Avg.	41.71
Jan. 1959	40.58
Jan. 1955	34.95

Based on No. 1 heavy melting grade at Pittsburgh, Chicago, and eastern Pennsylvania.

PITTSBURGH

No. 1 heavy melting	41.00-42.00
No. 2 heavy melting	*36.00-37.00*
No. 1 dealer bundles	*44.00-45.00*
No. 2 bundles	30.00-31.00
No. 1 busheling	*42.00-43.00*
No. 1 factory bundles	51.00-52.00
Machine shop turnings	22.00-23.00
Mixed borings, turnings	22.00-23.00
Shovel turnings	32.00-33.00
Cast iron borings	32.00-33.00
Cut structurals:	
2 ft and under	*50.00-51.00*
3 ft and under	*49.00-50.00*
Heavy turnings	35.00-36.00
Punchings & plate scrap	54.00-55.00
Electric furnace bundles	52.00-53.00

Cast Iron Grades

No. 1 cupola	50.00-51.00
Stove plate	46.00-47.00
Unstripped motor blocks	32.00-33.00
Clean auto cast	47.00-48.00
Drop broken machinery	54.00-55.00

Railroad Scrap

No. 1 R.R. heavy melt.	51.00-52.00
Rails, 2 ft and under	66.00-67.00
Rails, 18 in. and under	65.00-66.00
Random rails	61.00-62.00
Angles, splice bars	56.00-57.00
Railroad specialties	58.00-59.00
Rails, rerolling	66.00-67.00

Stainless Steel Scrap

18-8 bundles & solids	230.00-235.00
18-8 turnings	120.00-125.00
430 bundles & solids	125.00-130.00
430 turnings	55.00-65.00

CHICAGO

No. 1 hvy melt., indus.	41.00-42.00
No. 1 hvy melt., dealer	39.00-40.00
No. 2 hvy melting	*35.00-36.00*
No. 1 factory bundles	*45.00-46.00*
No. 1 dealer bundles	40.00-41.00
No. 2 bundles	25.00-27.00
No. 1 busheling, indus.	*41.00-42.00*
No. 1 busheling, dealer	*39.00-40.00*
Machine shop turnings	22.00-23.00
Mixed borings, turnings	24.00-25.00
Shovel turnings	24.00-25.00
Cast iron borings	24.00-25.00
Cut structurals, 3 ft	48.00-49.00
Punchings & plate scrap	50.00-51.00

Cast Iron Grades

No. 1 cupola	54.00-55.00
Stove plate	48.00-49.00
Unstripped motor blocks	46.00-47.00
Clean auto cast	60.00-61.00
Drop broken machinery	60.00-61.00

Railroad Scrap

No. 1 R.R. heavy melt.	44.00-45.00
R.R. malleable	62.00-63.00
Rails, 2 ft and under	59.00-60.00
Rails, 18 in. and under	60.00-61.00
Angles, splice bars	54.00-55.00
Axles	58.00-60.00
Rails, rerolling	61.00-62.00

Stainless Steel Scrap

18-8 bundles, solids	220.00-225.00
18-8 turnings	115.00-120.00
430 bundles & solids	115.00-120.00
430 turnings	55.00-60.00

DETROIT

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	*36.00-37.00*
No. 2 heavy melting	24.00-25.00
No. 1 bundles	*38.00-39.00*
No. 2 bundles	22.00-23.00
No. 1 busheling	*35.00-36.00*
Machine shop turnings	*13.00-14.00*
Mixed borings, turnings	13.00-14.00
Shovel turnings	14.00-15.00

Cast Iron Grades

No. 1 cupola	45.00-46.00
Stove plate	39.00-40.00
Heavy breakable	39.00-40.00
Unstripped motor blocks	31.00-32.00
Charging box cast	39.00-40.00
Clean auto cast	52.00-53.00

CLEVELAND

No. 1 heavy melting	*41.00-42.00*
No. 2 heavy melting	33.00-34.00
No. 1 factory bundles	*47.00-48.00*
No. 1 bundles	*43.00-44.00*
No. 2 bundles	26.00-27.00
No. 1 busheling	*44.50-45.50*
Machine shop turnings	16.00-17.00
Shovel turnings	22.00-23.00
Mixed borings, turnings	22.00-23.00
Cast iron borings	22.00-23.00
Cut foundry steel	*43.00-44.00*
Cut structurals, plate 2 ft and under	*50.00-51.00*
Low phos. punchings & plate	45.00-46.00
Alloy free, short shovel turnings	23.00-24.00
Electric furnace bundles	46.00-47.00

Cast Iron Grades

No. 1 cupola	55.00-56.00
Charging box cast	43.00-44.00
Heavy breakable cast	41.00-42.00
Stove plate	49.00-50.00
Unstripped motor blocks	39.00-40.00
Brake shoes	39.00-40.00
Clean auto cast	58.00-59.00
Burnt cast	47.00-48.00
Drop broken machinery	58.00-59.00

Railroad Scrap

R.R. malleable	64.00-65.00
Rails, 2 ft and under	65.00-66.00
Rails, 18 in. and under	66.00-67.00
Rails, random lengths	59.00-60.00
Cast steel	53.00-54.00
No. 1 railroad cast	58.50-59.50
Railroad specialties	57.00-58.00
Angles, splice bars	57.00-58.00
Rails, rerolling	74.00-75.00

Stainless Steel (Brokers' buying prices: f.o.b. shipping point)

18-8 bundles, solids	210.00-215.00
18-8 turnings	110.00-115.00
430 clips, bundles, solids	115.00-120.00
430 turnings	45.00-55.00

YOUNGSTOWN

No. 1 heavy melting	*44.00-45.00*
No. 2 heavy melting	36.00-37.00
No. 1 busheling	*49.00-50.00*
No. 1 bundles	*46.00-47.00*
No. 2 bundles	29.00-30.00
Machine shop turnings	18.00-19.00
Shovel turnings	23.00-24.00
Cast iron borings	23.00-24.00
Low phos.	48.00-49.00
Electric furnace bundles	48.00-49.00

Railroad Scrap

No. 1 R.R. heavy melt.	*47.00-48.00*

BUFFALO

No. 1 heavy melting	37.00-38.00
No. 2 heavy melting	33.00-34.00
No. 1 bundles	37.00-38.00
No. 2 bundles	27.00-28.00
No. 1 busheling	37.00-38.00
Shovel turnings	24.00-25.00
Machine shop turnings	20.00-21.00
Cast iron borings	22.00-23.00
Low phos. structurals and plate, 2 ft and under	45.00-46.00

Cast Iron Grades (F.o.b. shipping point)

No. 1 cupola	*50.00*
No. 1 machinery	51.00-52.00

Railroad Scrap

Rails, random lengths	47.00-48.00
Rails, 3 ft and under	53.00-54.00
Railroad specialties	45.00-46.00

CINCINNATI

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	36.00-37.00
No. 2 heavy melting	30.50-31.50
No. 1 bundles	36.00-37.00
No. 2 bundles	25.00-26.00
No. 1 busheling	36.00-37.00
Machine shop turnings	20.00-21.00
Mixed borings, turnings	20.00-21.00
Shovel turnings	22.00-23.00
Cast iron borings	21.00-22.00
Low phos. 18 in.	49.00-50.00

Cast Iron Grades

No. 1 cupola	49.00-50.00
Heavy breakable cast	44.00-45.00
Charging box cast	44.00-45.00
Drop broken machinery	59.00-60.00

Railroad Scrap

No. 1 R.R. heavy melt.	44.00-45.00
Rails, 18 in. and under	63.00-64.00
Rails, random lengths	54.00-55.00

PHILADELPHIA

No. 1 heavy melting	42.00
No. 2 heavy melting	*38.00*
No. 1 bundles	*47.00*
No. 2 bundles	26.00
No. 1 busheling	*47.00*
Electric furnace bundles	49.00
Mixed borings, turnings	21.00-22.00†
Shovel turnings	27.00
Machine shop turnings	23.00
Heavy turnings	35.00†
Structurals & plates	49.00-51.00
Couplers, springs, wheels	51.00
Rail crops, 2 ft & under	66.00-68.00

Cast Iron Grades

No. 1 cupola	45.00
Heavy breakable cast	47.00
Drop broken machinery	54.00-55.00
Malleable	68.00

NEW YORK

(Brokers' buying prices)

No. 1 heavy melting	36.00-37.00
No. 2 heavy melting	32.00-33.00
No. 1 bundles	36.00-37.00
No. 2 bundles	20.00-21.00
Machine shop turnings	11.00-12.00
Mixed borings, turnings	14.00-15.00
Shovel turnings	15.00-16.00
Low phos. structurals & plates	39.00-40.00

Cast Iron Grades

No. 1 cupola	38.00-39.00
Unstripped motor blocks	25.00-26.00
Heavy breakable	37.00-38.00

Stainless Steel

18-8 sheets, clips, solids	200.00-205.00
18-8 borings, turnings	85.00-90.00
410 sheets, clips, solids	55.00-60.00
430 sheets, clips, solids	85.00-90.00

BOSTON

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	35.00-36.00
No. 2 heavy melting	25.50-26.50
No. 1 bundles	35.00-36.00
No. 1 busheling	35.00-36.00
Machine shop turnings	11.00-12.00
Shovel turnings	15.00-16.00
No. 1 cast	39.00-40.00
Mixed cupola cast	37.00-38.00
No. 1 machinery cast	40.00-43.00

BIRMINGHAM

No. 1 heavy melting	36.00-37.00
No. 2 heavy melting	31.00-32.00
No. 1 bundles	36.00-37.00
No. 2 bundles	24.00-25.00
No. 1 busheling	40.00-41.00
Cast iron borings	14.00-15.00
Machine shop turnings	23.00-24.00
Shovel turnings	25.00-26.00
Bar crops and plate	44.00-45.00
Structurals & plates	43.00-44.00
Electric furnace bundles	40.00-41.00
Electric furnace:	
3 ft and under	39.00-40.00
2 ft and under	38.00-39.00

Cast Iron Grades

No. 1 cupola	53.00-54.00
Stove plate	53.00-54.00
Charging box cast	29.00-30.00
Unstripped motor blocks	42.00-43.00
No. 1 wheels	44.00-45.00

Railroad Scrap

No. 1 R.R. heavy melt.	36.00-37.00
Rails, 18 in. and under	56.00-57.00
Rails, rerolling	61.00-62.00
Rails, random lengths	52.00-53.00
Angles, splice bars	49.00-50.00

ST. LOUIS

(Brokers' buying prices)

No. 1 heavy melting	35.00-37.00
No. 2 heavy melting	33.00-34.00
No. 1 bundles	42.00
No. 2 bundles	25.00
No. 1 busheling	42.00
Machine shop turnings	19.00
Shovel turnings	21.00

Cast Iron Grades

No. 1 cupola	53.00
Charging box cast	46.00
Heavy breakable cast	44.00
Unstripped motor blocks	45.00
Clean auto cast	56.00
Stove plate	45.00

Railroad Scrap

No. 1 R.R. heavy melt.	45.00
Rails, 18 in. and under	56.00
Rails, random lengths	50.00
Rails, rerolling	65.00
Angles, splice bars	50.00

HOUSTON

(Exporters' buying prices; f.a.s.)

No. 1 heavy melting	36.00-37.00
No. 2 heavy melting	34.00
No. 2 bundles	26.50-27.50

(Brokers' buying prices; f.o.b. cars)

No. 1 heavy melting	34.00†
No. 2 heavy melting	31.00†
No. 1 bundles	34.00
No. 2 bundles	20.00†
Machine shop turnings	17.00
Shovel turnings	20.00
Low phos, plate & structurals	*47.00-48.00*

Cast Iron Grades

No. 1 cupola	*46.00-47.00*
Heavy breakable	*34.00*
Foundry malleable	*42.00-43.00*
Unstripped motor blocks	*37.00-38.50*

Railroad Scrap

No. 1 R.R. heavy melt.	38.00-39.00

LOS ANGELES

(Brokers' buying prices)

No. 1 heavy melting	40.00
No. 2 heavy melting	38.00
No. 1 bundles	37.00
No. 2 bundles	21.00
Machine shop turnings	18.00
Shovel turnings	18.00
Cast iron borings	18.00
Cut structurals and plate 1 ft and under	48.00

Cast Iron Grades

No. 1 cupola	47.00

Railroad Scrap

No. 1 R.R. heavy melt.	39.00

PORTLAND, OREG.

(Brokers' buying prices)

No. 1 heavy melting	*38.00*
No. 2 heavy melting	*36.00*
No. 1 bundles	36.00
No. 2 bundles	*25.00*
Shovel turnings	22.00
Electric furnace bundles	42.00-44.00

Cast Iron Grades

No. 1 cupola	40.00-42.00
Heavy breakable	35.00
Unstripped motor blocks	31.00
Stove plate	21.00

SEATTLE

No. 1 heavy melting	35.00†
No. 2 heavy melting	*32.00*
No. 1 bundles	*32.00*
No. 2 bundles	22.00†
Machine shop turnings	17.00†
Mixed borings, turnings	17.00†
Electric furnace No. 1	42.00-43.00

Cast Iron Grades

No. 1 cupola	34.00†
Heavy breakable cast	28.00†
Unstripped motor blocks	26.00†
Stove plate (f.o.b. plant)	21.00†

SAN FRANCISCO

No. 1 heavy melting	40.00
No. 2 heavy melting	36.00
No. 1 bundles	36.00
No. 2 bundles	22.00
Machine shop turnings	16.00
Mixed borings, turnings	16.00
Cast iron borings	16.00
Heavy turnings	16.00
Shovel turnings	16.00
Cut structurals, 3 ft	44.00

Cast Iron Grades

No. 1 cupola	48.00
Charging box cast	34.00
Stove plate	34.00
Heavy breakable cast	28.00
Unstripped motor blocks	31.00
Clean auto cast	40.00
Drop broken machinery	40.00
No. 1 wheels	34.00

HAMILTON, ONT.

(Brokers' buying prices)

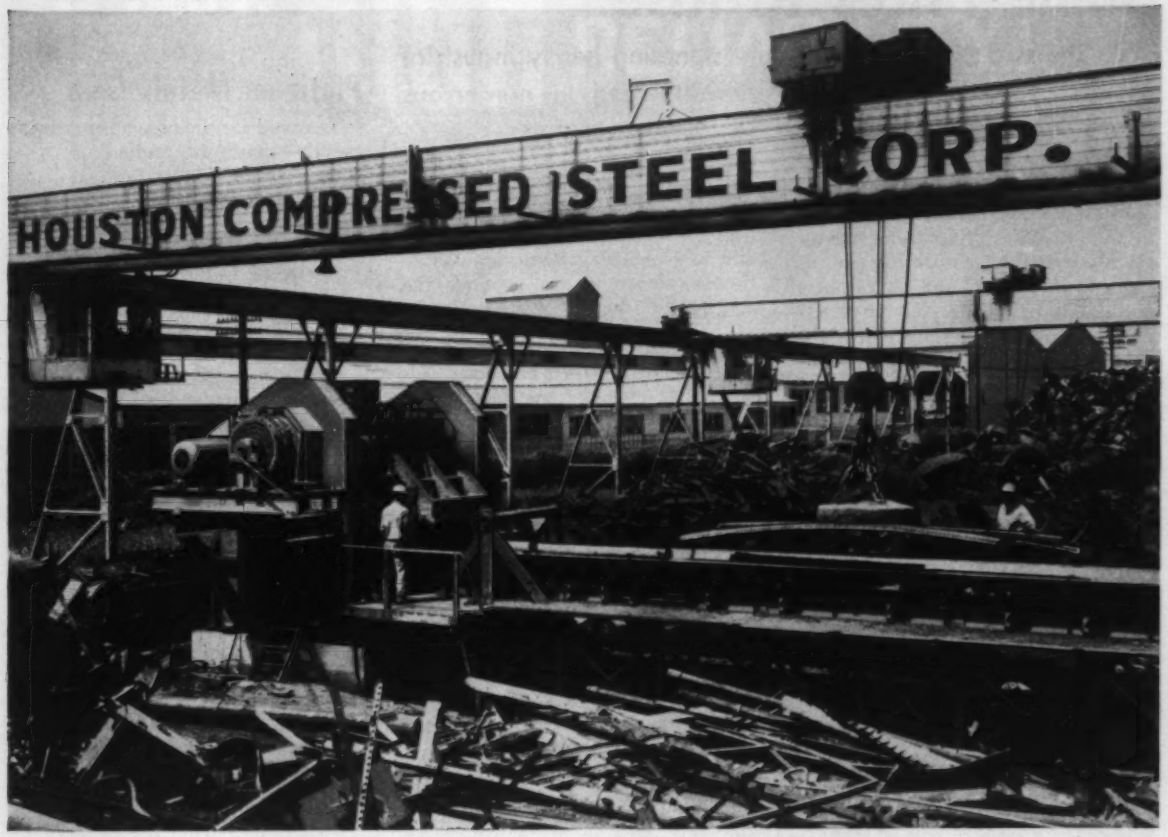
No. 1 heavy melting	32.25
No. 2 heavy melting	28.25
No. 1 bundles	32.25
No. 2 bundles	24.00
Mixed steel scrap	24.25
Mixed borings, turnings	13.00
Busheling, new factory:	
Prepared	32.25
Unprepared	26.25
Shovel turnings	17.00

Cast Iron Grades†

No. 1 machinery cast	46.50-48.00

*Delivered to docks.
†Nominal.
‡F.o.b. Hamilton, Ont.

Let's talk about SCRAP!



Model No. 160 HILL ACME Rotary Scrap Shear in operation at Houston, Texas

Let's talk about scrap—Quality scrap in big tonnage—Scrap that brings premium prices—Cleaner scrap with less scale and dirt, made possible through shock cutting—Scrap with greater density because of less distortion in preparation.

HOW TO GET IT?

Continuous uninterrupted feeding by means of a vibrating conveyor permitting feeding of unlimited lengths of unprepared material. The open top conveyor also permits scrap segregation while shear is operating. Proper positioning of material is easily done on the conveyor to insure rapid cutting to proper lengths.

THE HILL ACME ROTARY SCRAP SHEAR

is the ONLY automatic shear offering all of the above advantages. Employing a simple mechanical principle the HILL ACME Rotary Shear can be serviced and maintained by any good mechanic thereby effecting lower maintenance costs. A comparison of total ton costs of prepared scrap with any other type of automatic shearing device shows important savings.

HILL ACME Rotary Scrap Shears are built in a variety of sizes to meet YOUR particular requirements. Let us suggest an installation best suited to your needs.

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Some Prices to Rise

With the end of the steel dispute signaling heavy industrial activity, you can look for a strengthening in nonferrous quotations. Good future seen for platinum metals

Nonferrous Metal Prices, Pages 128 & 129

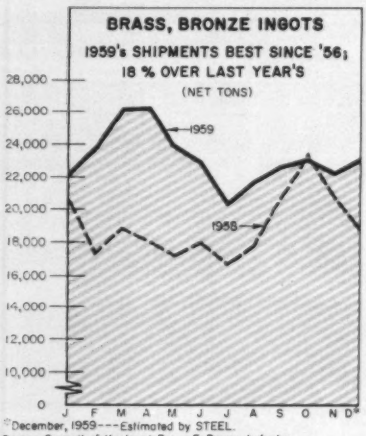
MEMO to metalworkers: Look for some nonferrous prices to be strongly influenced by the settlement in steel. Peace in steel and the promise of high level business activity that it brings, plus the certainty of higher steel prices in a few months, will exert strong pressures on many nonferrous quotations.

• **Going Up**—Zinc prices will most likely rise 0.5 cent a pound soon, followed by an identical boost later in the year. The good sales the industry has enjoyed over the last few months—good enough to support two price hikes—will get even better as galvanizers and diecasters come into the market for more metal.

• **Bullish**—Copper could easily go up. Reasons: The guarantee that demand will rise as customers no longer have to curtail operations for lack of steel, coupled with a continuing short supply of the metal over the next few months. It's likely that primary producers will try to hold the line at the present 33 cent a pound figure. But dealer prices will surely go up, as might the custom smelter quotation.

• **To Rise Later**—Aluminum prices will probably take another jump, but odds are this won't occur right away. Producers made no secret that recent advances merely brought quotations back to the level of early 1958 and didn't take into account increased labor costs and other expenses in the interim. The strong likelihood that steel producers will bump quotations in the next few months makes an aluminum hike even more likely. Probable: Two separate bumps of 0.5 cent a pound each this year.

• **Stimulated**—The tin price is already reacting to the bullish tone in the market brought on by the steel settlement. Look for a significant increase in demand as users come into the market to fill current needs and to replenish inventories. While there's plenty of tin around, the tone for the next three months will probably be one of higher prices.



*December, 1959---Estimated by STEEL.
Source: Council of the Ingot Brass & Bronze Industry.

• **Look Stable**—Nickel prices should remain where they are throughout 1960 in spite of the increased business expected and the threat of a cutoff in some production due to the Cuban political situation.

The steel settlement doesn't affect magnesium.

Demand for lead will be helped by the steel settlement, but it's unlikely the price will rise soon. Over the course of the year, watch for prices to advance a little.

Platinum Metals Gain

Demand for the precious platinum metals—platinum, palladium, rhodium, ruthenium, iridium, and osmium—is being spurred by wider recognition of the fact that it often costs too much to use other metals for selected industrial purposes. So declares Harold E. Searle, manager, Platinum Metals Div., International Nickel Co. Inc.

Once regarded as jewelry metals, they have emerged as materials of proved worth for selected industrial uses which now account for about 85 per cent of total demand. The remaining 15 per cent of demand comes mostly from suppliers to the jewelry and dental trades—the early and continuing markets.

The performance and economy of platinum catalysts in reformers producing high-octane gasoline . . . of metallic platinum and its alloys in making and forming hot glass . . . of small palladium contacts in automatic electrical switches and controls . . . of palladium catalysts in chemical synthesis, and many other uses . . . have prompted key people to study the possibilities of the platinum metals—often for the first time. Interest is not wholly centered on the two principal platinum metals—platinum and palladium—but extends to the other and scarcer platinum metals—rhodium, ruthenium, iridium, and osmium, the Inco official reports.

The upward trend in demand

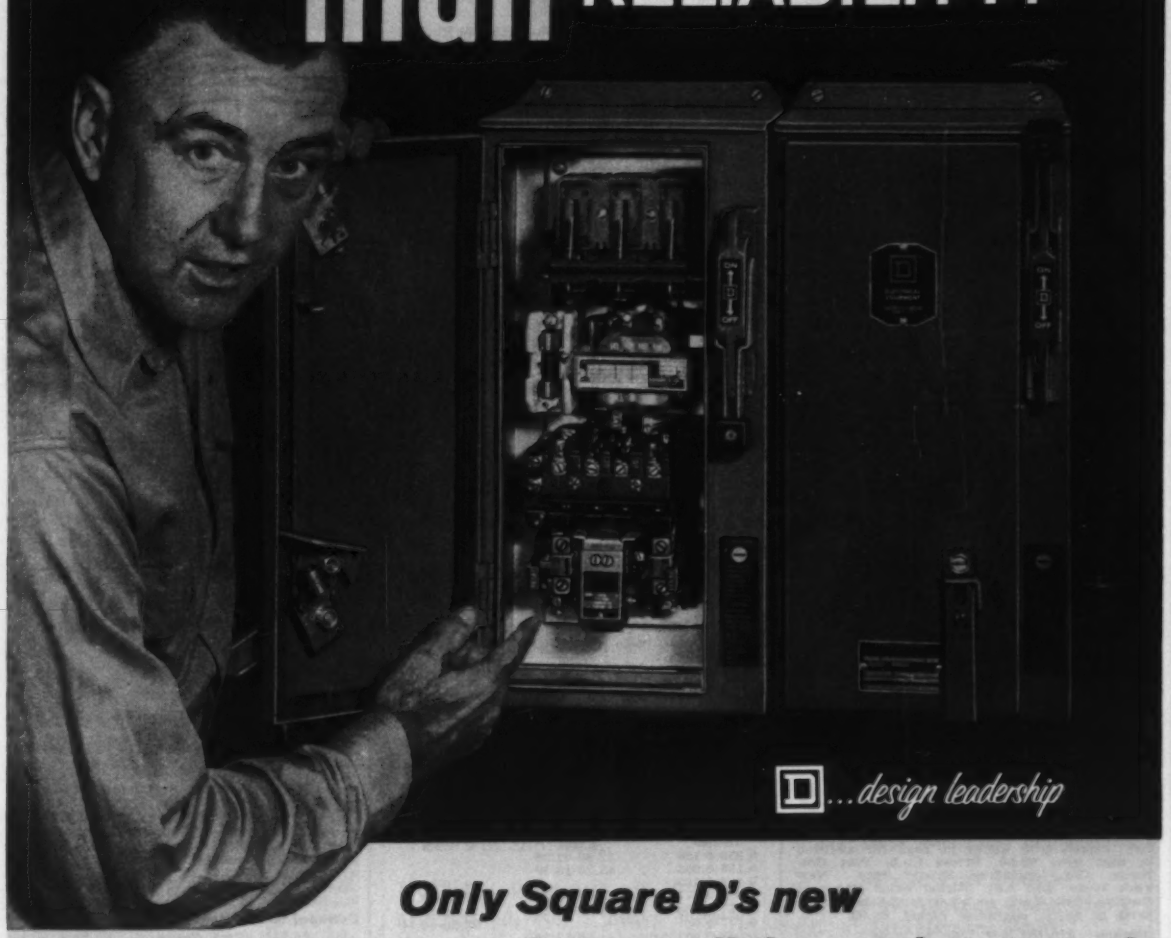
(*Please turn to Page* 129)

NONFERROUS PRICE RECORD

	Jan. 6 Price	Last Change	Previous Price	Dec. Avg	Nov. Avg	Jan., 1959 Avg
Aluminum .	26.00	Dec. 17, 1959	24.70	25.300	24.700	24.700
Copper	33.00–35.00	Dec. 23, 1959	33.00	33.269	32.420	29.212
Lead	11.80	Dec. 21, 1959	12.30	12.338	12.800	12.415
Magnesium .	35.25	Aug. 13, 1956	33.75	35.250	35.250	35.250
Nickel	74.00	Dec. 6, 1956	64.50	74.000	74.000	74.000
Tin	99.25	Jan. 6, 1960	99.375	99.130	100.985	99.409
Zinc	12.50	Nov. 2, 1959	12.50–13.00	12.500	12.500	11.500

Quotations in cents per pound based on: COPPER, mean of primary and secondary, deld. Conn. Valley; LEAD, common grade, deld. St. Louis; ZINC, prime western, E. St. Louis; TIN, Straits, deld. New York; NICKEL, electrolytic cathodes, 99.9%, base size at refinery, unpacked; ALUMINUM, primary pig, 99.5+%, f.o.b. customer custody; MAGNESIUM, pig 99.8%, Velasco, Tex.

a New HIGH IN SAFETY AND RELIABILITY!



Only Square D's new combination starters give you all these advantages!

EXTRA SAFETY! • Operating handle permanently attached to switch—eliminates hazard of false handle indication. • Double protection against opening door with switch "ON." • Visible Blades on switch mean safety you can see. • Door must be completely closed before switch can be operated.

REAL RELIABILITY! • Really dust-tight—NEMA 5-12 construction keeps out dust and coolant • Door closes snugly every time—latches at both top and bottom to make tight seal. • Simple closing mechanism—no complicated linkages to get out of adjustment. • Rugged construction throughout for extra-long life.

SO SIMPLE TO USE! • Front operation makes ganging easy. • Plenty of wiring space—all through-wiring with line terminals at top, load terminals at bottom. • Fuse clip-spacing and sizes easily changed to simplify horsepower or voltage change.

Get the Complete Story on the newest, safest, most dependable combination starter available
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SQUARE D COMPANY

wherever electricity is distributed and controlled

Nonferrous Metals

Cents per pound, carlots except as otherwise noted.

PRIMARY METALS AND ALLOYS

Aluminum: 99.5%, pigs, 26.00; ingots, 28.10, 30,000 lb or more, f.o.b. customer custody.

Aluminum Alloy: No. 13, 29.90; No. 43, 29.70; No. 195, 30.70; No. 214, 31.50; No. 356, 28.60; 30 or 40 lb ingots.

Antimony: R.M.M. brand, 99.5%, 29.00; Lone Star brand, 29.50, f.o.b. Laredo, Tex., in bulk. Foreign brands, 99.5%, 24.50-25.00, New York, duty paid, 10,000 lb or more.

Beryllium: 97% lump or beads, $71.50 per lb, f.o.b. Cleveland or Reading, Pa.

Beryllium Aluminum: 5% Be, $74.75 per lb of contained Be, with balance as Al at market price, f.o.b. shipping point.

Beryllium Copper: 3.75-4.75% Be, $43 per lb of contained Be, with balance as Cu at market price on shipment date, f.o.b. shipping point.

Bismuth: $2.25 per lb, ton lots.

Cadmium: Sticks and bars, $1.40 per lb deld.

Cobalt: 99+%, $1.75 per lb for 500-lb keg, $1.77 per lb for 100 lb case; $1.82 per lb under 100 lb.

Columbium: Powder, $55-85 per lb nom.

Copper: Electrolytic, 33.00 deld.; custom smelters, 35.00; lake, 33.00 deld.; fire refined, 32.75 deld.

Germanium: First reduction, less than 1 kg, 38.30 per gram; 1-10 kg, 33.30 per gram; 10 kg or more, 31.30 per gram; intrinsic grade, 33.30-35.30 per gram.

Gold: U. S. Treasury, $35 per oz.

Indium: 99.9%, $2.25 per troy oz.

Iridium: $75-80 per troy oz nom.

Lead: Common, 11.80; chemical, 11.90; corroding, 11.90, St. Louis. New York basis, add 0.20.

Lithium: 1 lb or 2 lb ingots, less than 50 lb, $11 per lb, f.o.b. Minneapolis; 50-99 lb, $10; 100-499 lb, $9.50; 500 lb or more, $9 per lb, delivered.

Magnesium: Pig, 35.25; ingot, 36.00 f.o.b. Velasco, Tex.; 1.3 in. diam. x 12 in. sticks, 57.00 f.o.b. Madison, Ill.

Magnesium Alloy: AZ91A (diecasting), 40.75; AZ63A, AZ92A, AZ91C (sand casting), 40.75, f.o.b. Velasco, Tex.

Mercury: Open market, spot, New York, $212-214 per 75 lb flask.

Molybdenum: Unalloyed forging billets, 4.125-7.0 in. diam., 50-4999 lb, $8.15-11.50 per lb, depending on quantity; 5000 lb or more, $8 per lb, f.o.b. Coldwater, Mich.

Nickel: Electrolytic cathodes, sheets (4 x 4 in. and larger), unpacked, 74.00; 10-lb pigs, unpacked, 78.25; "XX" nickel shot, 79.50; "F" nickel shot for addition to cast iron, 74.50; "F" nickel, 5 lb ingots in kegs for addition to cast iron, 75.50. Prices f.o.b. Port Colborne, Ont., including import duty. New York basis, add 1.01. Nickel oxide sinter at Buffalo, New York, or other established U. S. ports of entry, contained nickel, 69.60.

Osmium: $70-100 per troy oz nom.

Palladium: $22-24 per troy oz.

Platinum: $77-80 per troy oz from refineries.

Radium: $16-21.50 per mg radium content, depending on quantity.

Rhodium: $122-125 per troy oz.

Ruthenium: $55-60 per troy oz.

Selenium: $7.00 per lb, commercial grade.

Silver: Open market, 91.375 per troy oz.

Sodium: Solid pack, c.l., 19.50; l.c.l., 20.00; brick, c.l., 21.00; l.c.l., 21.50; tank car, 17.00.

Tantalum: Melting stock, $35 per lb; rod, $60 per lb nom.; sheet, $55 per lb nom.

Tellurium: $3.00 per lb.

Thallium: $7.50 per lb.

Tin: Straits, N. Y., spot and prompt, 99.25.

Titanium: Sponge, 99.3+% grade A-1, ductile (0.3% Fe max.), $1.60 per lb; grade A-2 (0.5% Fe max.), $1.50 per lb.

Tungsten: Powder, 98.8%, carbon reduced, 1000-lb lots, $2.75-2.90 per lb nom., f.o.b. shipping point; less than 1000 lb, add 15.00; 99+% hydrogen reduced, $3.10-4.00.

Zinc: Prime western, 12.50; brass special, 12.75; intermediate, 13.00 East St. Louis, freight allowed over 0.50 per lb. New York basis, add 0.50. High grade, 13.75; special high grade, 14.00 deld. Diecasting alloy ingot No. 3, 15.75; No. 2, 16.25; No. 5, 16.00 deld.

Zirconium: Reactor grade sponge, 100 lb or less, $8 per lb; 100-500 lb, $7.00 per lb; over 500 lb, $6.50 per lb.
(Note: Chromium, maganese, and silicon metals are listed in ferroalloy section.)

SECONDARY METALS AND ALLOYS

Aluminum Ingot: Piston alloys, 27.25-29.00; No. 12 foundry alloy (No. 2 grade), 25.00-25.25; 5% silicon alloy, 0.60 Cu max., 26.25; 13 alloy, 0.60 Cu max., 26.25; 195 alloy, 28.00-28.75; 108 alloy, 25.50-25.75. Steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 25.75; grade 2, 24.50; grade 3, 23.50; grade 4, 22.75.

Brass Ingot: Red brass, No. 115, 30.75; tin bronze, No. 225, 41.50; No. 245, 36.00; high-leaded tin bronze, No. 305, 35.25; No. 1 yellow, No. 405, 24.75; manganese bronze, No. 421, 29.25.

Magnesium Alloy Ingot: AZ63A, 37.50; AZ91B, 37.25; AZ91C, 41.25; AZ92A, 37.50.

NONFERROUS PRODUCTS

BERYLLIUM COPPER

(Base prices per lb, plus mill extras, 2000 to 5000 lb; nom. 1.9% Be alloy.) Strip, $1.975, f.o.b. Temple, Pa., or Reading, Pa.; rod, bar, wire, $1.955, f.o.b. Temple, Pa.

COPPER WIRE

Bare, soft, f.o.b. eastern mills, 20,000-lb lots, 38.35; l.c.l., 33.98. Weatherproof, 20,000-lb lot, 38.55; l.c.l., 39.30.

LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh.) Sheets, full rolls, 140 sq ft or more, $17.50 per cwt; pipe, full coils, $17.50 per cwt; traps and bends, list prices plus 30%.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill.) Sheet and strip, $7.25-17.00; sheared mill plate, $5.25-10.00; wire, $5.55-9.50; forging billets, $3.20-4.75; hot-rolled and forged bars, $4.00-6.25.

ZINC

(Prices per lb, c.l., f.o.b. mill.) Sheets, 26.00; ribbon zinc in coils, 21.50; plates, 20.00.

ZIRCONIUM

Plate, $12.50-19.20; H.R. strip, $12.50-22.90; C.R. strip, $15.90-31.25; forged or H.R. bars, $11.00-17.40.

NICKEL, MONEL, INCONEL

	"A" Nickel	Monel	Inconel
Sheets, C.R	138	120	138
Strip, C.R.	124	108	138
Plate, H.R.	130	110	126
Rod, Shapes, H.R.	107	89	109
Sealmless Tubes	157	129	200

ALUMINUM

(Prices do not yet reflect latest increases. Please check Jan. 18 issue.)

Sheets: 1100, 3003, and 5005 mill finish (30,000 lb base; freight allowed).

Thickness Range Inches	Flat Sheet	Coiled Sheet
0.250-0.136	42.80-47.30	.....
0.136-0.096	43.20-48.30	.....
0.126-0.103	.....	39.20-39.80
0.096-0.077	43.80-50.00	39.30-40.00
0.077-0.068	44.30-52.20	.....
0.077-0.061	.....	39.50-40.70
0.068-0.061	44.30-52.20	.....
0.061-0.048	44.90-54.40	40.10-41.80
0.048-0.038	45.40-57.10	40.60-43.20
0.038-0.030	45.70-62.00	41.00-45.70
0.030-0.024	46.20-53.70	41.30-45.70
0.024-0.019	46.90-56.80	42.40-44.10
0.019-0.017	47.70-54.10	43.00-44.70
0.017-0.015	48.60-55.00	43.80-45.50
0.015-0.014	46.00	48.80-46.50
0.014-0.012	50.80	45.50
0.012-0.011	51.00	46.70
0.011-0.0095	53.50	48.10
0.0095-0.0085	54.60	49.60
0.0085-0.0075	56.20	50.85
0.0075-0.007	57.70	52.30
0.007-0.006	59.30	53.70

ALUMINUM (continued)

Plates and Circles: Thickness 0.250-3 in. 24-60 in. width or diam., 72-240 in. lengths.

Alloy	Plate Base	Circle Base
1100-F, 3003-F	42.40	47.20
5050-F	43.50	48.30
3004-F	44.50	50.20
5052-F	45.10	50.90
6061-T6	45.60	51.70
2024-T4	49.30	56.10
7075-T6*	57.60	64.70

*24-48 in. width or diam., 72-180 in. lengths.

Screw Machine Stock: 30,000 lb base.

Diam. (in.) or across flats*	Round 2011-T3	Round 2017-T4	Hexagonal 2011-T3	Hexagonal 2017-T4
0.125	76.90	73.90	....	....
0.250	62.00	60.20	89.10	76.60
0.375	61.20	60.00	73.50	68.50
0.500	61.20	60.00	73.50	68.50
0.625	61.20	60.00	69.80	64.20
0.750	59.70	58.40	63.60	60.40
0.875	59.70	58.40	63.60	60.40
1.000	59.70	58.40	63.60	60.40
1.125	57.30	56.10	61.50	58.30
1.250	57.30	56.10	61.50	58.30
1.530	57.30	56.10	61.50	58.30
1.500	57.30	56.10	61.50	58.30
1.625	55.00	53.60	....	56.20
1.750	55.00	53.60	60.30	56.20
1.875	55.00	53.60	....	56.20
2.000	55.00	53.60	60.30	56.20
2.125	53.50	52.10	....	....
2.250	53.50	52.10	....	56.20
2.375	53.50	52.10	....	....
2.500	53.50	52.10	....	56.20
2.625	....	50.40	....	....
2.750	51.90	50.40	....	56.20
2.875	....	50.40	....	....
3.000	51.90	50.40	....	56.20
3.125	....	50.40	....	....
3.250	....	50.40	....	....
3.375	....	50.40	....	....

*Selected sizes.

Forging Stock: Round, Class 1, random lengths, diam., 0.375-8 in., "F" temper; 2014, 42.20-55.00; 6061, 41.60-55.00; 7075, 61.60-75.00; 7070, 66.60-80.00.

Pipe: ASA schedule 40, alloy 6063-T6 standard length, plain ends, 90,000 lb base, dollars per 100 ft. Nominal pipe sizes: ⅜ in., 18.85; 1 in., 29.75; 1¼ in., 40.30; 1½ in., 48.15; 2 in., 58.30; 4 in., 160.20; 6 in., 287.55; 8 in., 432.70.

Extruded Solid Shapes:

Factor	Alloy 6063-T5	Alloy 6062-T6
9-11	42.70-44.20	51.30-55.50
12-14	42.70-44.20	52.00-56.50
15-17	42.70-44.20	53.20-58.20
18-20	43.20-44.70	55.20-60.80

MAGNESIUM

Sheets and Plate: AZ31B standard grade, .032 in., 103.10; .081 in., 77.90; .125 in., 70.40; .188 in., 69.00; .250-2.00 in., 67.90. AZ31B spec. grades, .032 in., 171.30; .081 in., 108.80; .125 in., 98.10; .188 in., 95.70; .250-2.00 in., 93.30. Tread plate, 60-192 in. lengths, 24-72 in. widths; .125 in., 74.90; .188 in., 71.70-72.10; .25-.75 in., 70.60-71.60. Tooling plate, 0.25-3.0 in., 73.00.

Extruded Solid Shapes:

Factor	Com. Grade (AZ31C)	Spec. Grade (AZ31B)
6-8	65.30-67.60	84.60-87.40
12-14	65.30-67.60	85.70-88.00
24-26	66.10-68.40	90.60-91.30
36-38	71.50-75.30	104.20-105.30

NONFERROUS SCRAP

DEALERS' BUYING PRICES

Copper and Brass: No. 1 heavy copper and wire, 24.75-25.25; No. 2 heavy copper and wire, 21.75-22.25; light copper, 20.25-20.75; No. 1 composition red brass, 18.50-18.75; No. 1 com-

BRASS MILL PRICES

	MILL PRODUCTS a				SCRAP ALLOWANCES e (Based on copper at 33.00c)		
	Sheets, Strip, Plate	Rod	Wire	Seamless Tubes	Clean Heavy	Rod Ends	Clean Turnings
Copper	57.13b	54.86c	....	58.32	29.000	29.000	28.250
Yellow Brass	50.57	36.06d	50.86	54.23	22.250	21.250	20.250
Low Brass, 80%	53.53	53.22	53.82	57.09	24.750	24.500	24.000
Red Brass, 85%	54.58	54.27	54.87	58.14	25.750	25.500	25.000
Com. Bronze, 90%	56.17	55.86	56.46	59.48	26.750	26.500	26.000
Manganese Bronze	58.86	52.21	62.69	....	20.875	20.625	19.875
Muntz Metal	53.20	48.26	....	....	20.875	20.625	20.125
Naval Brass	55.12	48.68	61.43	58.78	20.750	20.500	20.000
Silicon Bronze	62.86	61.80	62.15	80.79	28.375	28.125	27.375
Nickel Silver, 10%	65.98	68.06	68.06	....	26.875	26.625	14.937
Phos. Bronze	77.44	78.19	77.69	79.37	29.875	29.625	28.625

a. Cents per lb, f.o.b. mill; freight allowed on 50 lb or more. b. Hot-rolled. c. Cold-drawn. d. Free cutting. e. Prices in cents per lb for less than 20,000 lb, f.o.b. shipping point. On lots over 20,000 lb at one time, of any or all kinds of scrap, add 1 cent per lb.

position turnings, 17.25-17.75; new brass clippings, 16.00-16.50; light brass, 12.25-12.50; heavy yellow brass, 13.25-13.75; new brass rod ends, 14.00-14.50; auto radiators, unsweated, 14.50-15.00; cocks and faucets, 15.50-16.00; brass pipe, 15.75-16.20.

Lead: Soft scrap lead, 8.00-8.25; battery plates, 3.00-3.25; linotype and stereotype, 9.00-9.50; electrotype, 7.25-7.75; mixed babbitt, 9.50-10.00.

Monel: Clippins, 28.00-29.00; old sheets, 24.00-26.00; turnings, 20.00-22.00; rods, 28.00-29.00.

Nickel: Sheets and clips, 52.00-54.00; rolled anodes, 52.00-54.00; turnings, 39.00-40.00; rod ends, 52.00-54.00.

Zinc: Old zinc, 4.25-4.75; new diecast scrap, 4.00-4.25; old diecast scrap, 2.50-2.75.

Aluminum: Old castings and sheets, 11.00-11.50; clean borings and turnings, 7.00-7.50; segregated low copper clips, 15.00-15.50; segregated high copper clips, 14.00-14.50; mixed low copper clips, 14.50-15.00; mixed high copper clips, 12.50-13.00.

(Cents per pound, Chicago)

Aluminum: Old castings and sheets, 12.75-13.25; clean borings and turnings, 10.00-10.50; segregated low copper clips, 16.75-17.25; segregated high copper clips, 16.00-16.50; mixed low copper clips, 16.00-16.50; mixed high copper clips, 15.50-16.00.

(Cents per pound, Cleveland)

Aluminum: Old castings and sheets, 11.50-11.75; clean borings and turnings, 10.50-11.00; segregated low copper clips, 15.75-16.25; segregated high copper clips, 14.75-15.25; mixed low copper clips, 15.25-15.75; mixed high copper clips, 14.25-14.75.

REFINERS' BUYING PRICES

(Cents per pound, carlots, delivered refinery)

Beryllium Copper: Heavy scrap, 0.020-in. and heavier, not less than 1.5% Be, 59.00; light scrap, 54.00; turnings and borings, 39.00.

Copper and Brass: No. 1 heavy copper and wire, nom.; No. 2 heavy copper and wire, 26.50; light copper, 23.50; refinery brass (60% copper) dry copper content, 24.25.

INGOTMAKERS' BUYING PRICES

Copper and Brass: No. 1 heavy copper and wire, nom.; No. 2 heavy copper and wire, 25.50; light copper, 23.50; No. 1 composition borings, 22.25; No. 1 composition solids, 23.00; heavy yellow brass solids, 16.75; yellow brass turnings, 15.50; radiators, 18.00.

PLATING MATERIAL

(F.o.b. shipping point, freight allowed on quantities)

ANODES

Cadmium: Special or patented shapes, $1.40.

Copper: Flat-rolled, 50.04; oval, 48.00; 5000-10,000 lb; electrodeposited, 42.50; 2000-5000 lb lots; cast, 45.00, 5000-10,000 lb quantities.

Nickel: Depolarized, less than 100 lb, 114.25; 100-499 lb, 112.00; 500-4999 lb, 107.50; 5000-29,999 lb, 105.25; 30,000 lb, 103.00. Carbonized, deduct 3 cents a lb.

Tin: Bar or slab, less than 200 lb, 117.50; 200-499 lb, 116.00; 500-999 lb, 115.50; 1000 lb or more, 115.00.

Zinc: Balls, 19.75; flat tops, 19.75; flats, 22.50; ovals, 21.75, ton lots.

CHEMICALS

Cadmium Oxide: $1.40 per lb in 100-lb drums.

Chromic Acid (flake): 100-2000 lb, 31.00; 2000-10,000 lb, 30.50; 10,000-20,000 lb, 30.00; 20,000 lb or more, 29.50.

Copper Cyanide: 100-200 lb, 65.90; 300-900 lb, 63.00; 1000-19,900 lb, 61.90.

Copper Sulphate: 100-1900 lb, 16.00; 2000-5900 lb, 14.00; 6000-11,900 lb, 13.75; 12,000-22,900 lb, 13.50; 23,000 lb or more, 13.00.

Nickel Chloride: 100 lb, 45.00; 200 lb, 43.00; 300 lb, 42.00; 400-4900 lb, 40.00; 5000-9900 lb, 38.00; 10,000 lb or more, 37.00.

Nickel Sulphate: 5000-22,999 lb, 29.00; 23,000-39,990 lb, 28.50; 40,000 lb or more, 28.00.

Sodium Cyanide (Cyanobrik): 200 lb, 23.80; 400-800 lb, 20.80; 1000-4900 lb, 19.80; 5000-19,900 lb, 18.80; 20,000 lb or more, 17.60.

Sodium Stannate: Less than 100 lb, 78.00; 100-600 lb, 68.80; 700-1900 lb, 66.00; 2000-9900 lb, 64.10; 10,000 lb or more, 62.80.

Stannous Chloride (Anhydrous): 25 lb, 153.20; 100 lb, 148.30; 400 lb, 145.90; 800-19,900 lb, 105.00; 20,000 lb or more, 98.90.

Stannous Sulphate: Less than 50 lb, 138.40; 50 lb, 108.40; 100-1900 lb, 106.40; 2000 lb or more, 104.40.

Zinc Cyanide: 100-200 lb, 59.00; 300-900 lb, 57.00.

Nonferrous . . .

(*Concluded from Page* 126)

for platinum metals is not confined to the principal U. S. markets where 1959 purchases, exclusive of any U. S. government purchases, were expected to rise substantially above 700,000 ounces. This included about 300,000 of platinum and probably more than 350,000 of palladium. In the preceding year, purchases of all platinum metals amounted to 690,373 ounces, including 264,361 of platinum and a record-high 395,100 of palladium, says the U. S. Bureau of Mines.

The outlook for this year appears more promising than in 1959, Mr. Searle says. Normal growth is augmented by productive results coming from established platinum metals research and by a wider interest in studying the merits and the economies of platinum metals for industrial uses involving exacting requirements.

Scrap . . .

(*Concluded from Page* 123)

the No. 2 grade. Texas cast scrap is under pressure with brokers' quotations off $1 a ton.

• San Francisco—The market undertone is soft, but because of the fairly strong demand on export account, there seems little chance that prices will slip soon.

• Seattle—Prices are off $2 a ton at Portland, No. 1 heavy melting being quoted there at $38, No. 2 heavy melting at $36, and No. 2 bundles at $25. While there's not too much activity in the Portland area, the leading buyer is reported ready to accept all offers at the new price levels.

The Seattle market is softer. Sales are limited.

Iron Ore . . .

Iron Ore Prices, Page 119

Shipments of Lake Superior iron ore from the head of the lakes during December amounted to 3,149,947 gross tons, 3,074,634 tons more than in the like month of 1958, reports the American Iron Ore Association.

It brought the movement from

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CLASSIFIED RATES

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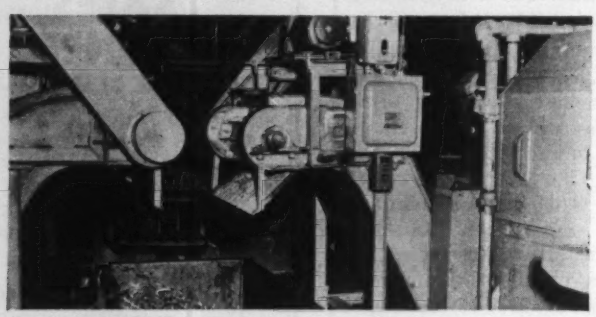

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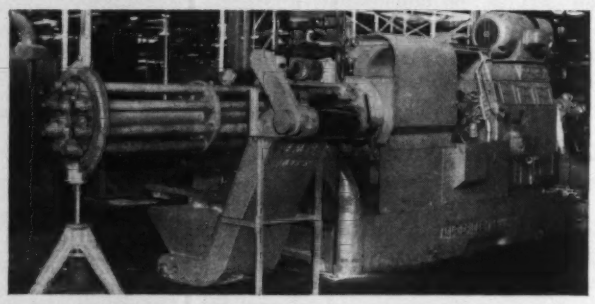

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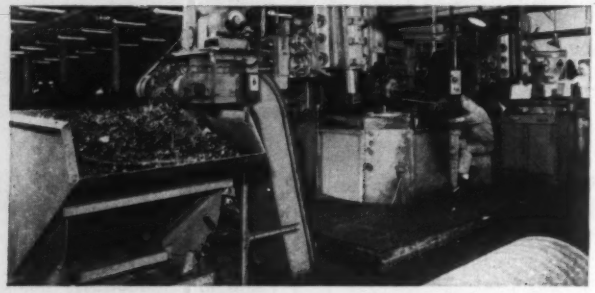

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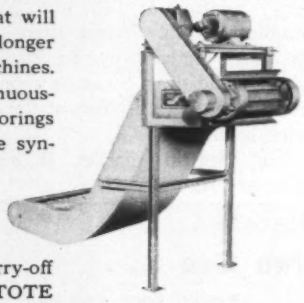

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the end of the steel strike in early November to about 8.3 million tons, short of the 10 million that had been hoped for when the Taft-Hartley injunction was applied in the steel strike.

The 1959 season movement totaled 46,691,291 tons, down 6,176,737 tons from that in 1958. The poorer showing was due to curtailed shipments during the 116 day steel strike. Comparative figures for recent years:

IRON ORE SHIPMENTS
(Gross tons)

1959	46,691,291
1958	52,868,028
1957	84,615,871
1956	77,633,027
1955	87,459,853
1954	60,793,697
1953	95,844,449
1952	74,910,798
1951	89,092,012
1950	78,205,592

November Blast Furnace Output Rises Sharply

Blast furnace production (pig iron and ferroalloys) totaled 4,219,273 net tons in November, reports the American Iron & Steel Institute. That was equal to 54.2 per cent of capacity.

It compared with output of 1,017,659 tons, or 12.7 per cent in October; 949,103 tons, or 12.2 per cent in September; 947,779 tons, or 11.8 per cent in August; 3,567,018 tons, or 44.4 per cent in July; and 7,289,946 tons, or 93.7 per cent in June, the last full production month prior to the steel strike.

Production in the first 11 months of last year amounted to 53,132,756 tons, equal to 61.4 per cent of capacity. Of the total, 383,477 tons were ferroalloys. In the first 11 months of 1958 the total was 51,691,210 tons, or 62.1 per cent of capacity—417,951 tons were ferroalloys. Production by states:

Production by States—11 Months, 1959-58
(Net tons)

	1959	1958
Massachusetts, New York	3,215,534	3,268,930
Pennsylvania	13,358,636	13,395,990
Maryland, Virginia, West Virginia	5,144,411	5,404,246
Kentucky, Tennessee, Texas	1,294,562	1,421,085
Alabama	3,268,047	3,063,286
Ohio	10,197,536	8,587,323
Indiana	5,785,620	6,953,318
Illinois	4,617,361	3,697,110
Michigan, Minnesota	3,577,723	2,894,116
Colorado, Utah, California	2,673,326	3,005,806
Totals	53,132,756*	51,691,210**

*Includes 383,477 tons of ferromanganese and spiegeleisen.
**Includes 417,951 tons of ferromanganese and spiegeleisen.
Data from American Iron & Steel Institute

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"Samson" Shot (chilled iron) "Angular" Grit

ANGULAR GRIT

AMERICA'S LEADING METAL ABRASIVES

The four most famous names in metal abrasives provide a size and type of shot or grit to meet every blast-cleaning need. Write for literature and recommendations.

PITTSBURGH CRUSHED STEEL CO.
Arsenal Sta., Pittsburgh 1, Pa.

MALLEABRASIVE
MALLEABLIZED SHOT and GRIT

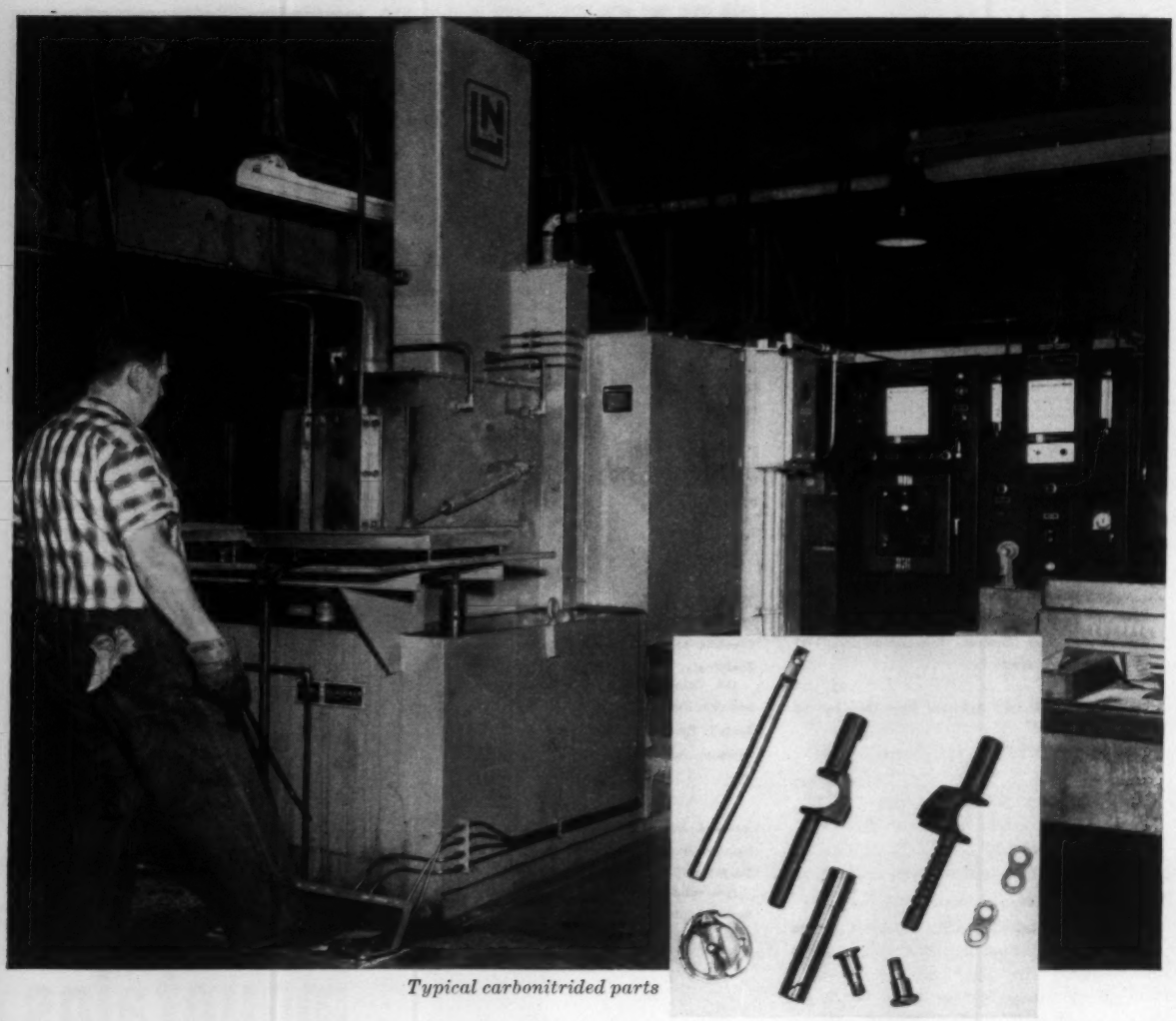
SSP TRU-STEEL SHOT
TRU-STEEL HIGH CARBON STEEL SHOT

man conquers mountains

And, some day, man will also conquer cancer. With your help.

Guard your family . . . fight cancer with a checkup and a check

AMERICAN CANCER SOCIETY



Typical carbonitrided parts

"Here at Singer we're not only saving money on cyanide salt . . .

but on handling costs formerly required to string up each part individually." So says the Heat-treat Manager of the Singer Manufacturing Company's plant at Elizabeth, N.J. where a new L&N Tricarb furnace was recently installed. "As yet," he says, "we can't give any exact cost figures. We've just been running parts and checking them through Quality Control. But we know our cost per part has really dropped."

At the present time, Singer is carbonitriding various sewing machine parts made of SAE 1010 to a case depth of 0.008" to 0.015" at 1550 F for ½ to ¾ of an hour at temperature. The cycles are fast and the work comes out of the protected atmosphere quench clean and bright.

The Manager points out that, "Once these parts are okayed by Quality Control we plan to do case carburizing and homogeneous carburizing in the same furnace. With Microcarb control we can tell exactly what we're doing and where we are. We bought this furnace as part of a quality control and reduced cost program . . . it's the most precise heat-treating tool we could find on the market. It's a natural for handling the variety and caliber of work we have to turn out."

If you, like Singer, must heat-treat a myriad of parts . . . need versatility and precision control . . . it will pay you to investigate this Tricarb furnace. It is a complete heat-treating package with integral quench and direct and continuous temperature and carbon control. In just one furnace you can now do controlled surface carburizing, carbon restoration, hardening, homogeneous carburizing or carbonitriding.

For more information *ask for Folder T 620(17).*
Just write us at 4957 Stenton Avenue, Philadelphia 44, Pa.
or call your nearest L&N office.

LEEDS Instruments NORTHRUP Automatic Controls • Furnaces